

Borderlands: A Novel and Poetics

Philippa Holloway, BA (Hons), MA, PGCTHE, FHEA.

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Declaration

This thesis is entirely my own work and has not been submitted in any form for the award of a Higher Degree at any other Educational Institution.

Abstract

Philippa Holloway BA (hons), MA, PGCTHE, FHEA.

A Thesis submitted to the Department of English, Edge Hill University, in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Creating Writing.

Borderlands: A Novel and Poetics

This thesis comprises a novel and poetics exploring how creative writing practice can be influenced by engaging in psychogeographic studies of landscapes containing nuclear power stations. The focus of this research is the Exclusion Zone surrounding the Chernobyl Nuclear Power Station in Ukraine and the landscape around Wylfa Nuclear Power Station in North Wales.

The novel explores how embodied experience of landscapes containing nuclear power production affects emotional and behavioural responses in the characters. It is designed as a contiguous narrative between the two places, following one sister's journey to and through the Exclusion Zone, and the remaining sister's re-evaluation of her response to nuclear power at home. This structure enables thematic links and comparisons between the contaminated and heavily restricted landscape that exists following the Chernobyl disaster, and the farming community around the still functional Wylfa.

The poetics is an autoethnographic study examining how my own relationship with nuclear landscapes informs my creative actions. In Part One I consider Guy Debord's definition of psychogeography alongside Eudora Welty's essay on place in fiction in relation to my writing processes. Examination of Maurice Merleau-Ponty's theories of embodied perception, and the writing of Robert Macfarlane, identifies how landscape is read physically and sensually, as well as visually, and how this informs my methodology. Part Two provides a detailed investigation of my psychogeographic practice within the landscapes of Wylfa and Chernobyl, with specific focus on those aspects of the novel that were influenced by this practice. In applying Debord's critique of 'the Spectacle' to the Exclusion Zone I discuss how engaging in dérives – drifts through multiple ambient spaces – facilitated the gathering of embodied knowledge for the novel.

This thesis analyses the ways in which landscape forms identity as much as identity informs perceptions of landscapes, and how this symbiosis shapes the narrative and characters in *Borderlands*. It exemplifies how psychogeography can be applied to rural irradiated spaces to form new understandings of emotional and behavioural responses to nuclear power, and how this can inform creative actions.

Keywords: Creative Writing, Nuclear, Chernobyl, Wylfa, Autoethnography, Psychogeography, Novel, Debord, Wales, Poetics.



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Introduction

These poetics are an autoethnographic discourse examining how I developed and applied a psychogeographic methodology to the study of two specific landscapes containing nuclear power stations, Wylfa/Wylfa B in North Wales and Chernobyl's Exclusion Zone in Northern Ukraine, and utilised the knowledge gained from this to write *Borderlands*. Whilst subjective to my own writing practice, and this novel specifically, my poetics intersects wider critical concerns regarding the practice of psychogeography and nuclear landscape perception, and provides insights into methods of engaging with nuclear landscapes creatively and critically from a writerly perspective.

The poetics are intrinsically linked to the creative work. As the *Creative Writing Research Benchmark Statement* explains, there exists 'a symbiotic link between the two; they are in dialogue with one another and in effect pose questions which are reciprocally addressed' (Neale *et al*, 2018: 4). The primary research question investigated in both is: in what ways do interactions with landscapes containing nuclear power stations inform emotions, perceptions and behaviour, and how has exploring this influenced my writing process and resultant output?

In part one of these poetics, 'The Journey Towards Nuclear Psychogeography', I reflect on my childhood memories of the Chernobyl disaster. I examine how my perception of local landscape was altered by learning that radiation was spreading across Europe to the UK. The tensions resulting from this experience, and my subsequent renegotiation of the natural world form the seeds for the novel. Recognising the power of my emotional, behavioural and sensory responses to the Chernobyl disaster, I examine the value in my own situatedness – social and cultural

– and how my anxieties, concerns and personal experiences regarding nuclear power informed my practice-led research. I acknowledge how my situated and experiential knowledge regarding nuclear power is a circumstantial source of inspiration, while psychogeographic practice within the landscapes themselves is a strategic source of inspiration, synthesising experience and practice within the research. Guy Debord defines psychogeography as ‘the study of the specific effects of the geographical environment (whether consciously organized or not) on the emotions and behaviour of individuals’ (Debord, 1955: 8), which I chose to examine further as the primary research method for *Borderlands*. Considering Debord’s definition of psychogeography and Eudora Welty’s (1994) essay on place and setting in fiction, I explore my decision to focus on the ways in which landscapes of nuclear power direct emotional and behavioural responses as the central driver for narrative and character development in the novel. Considering the practice of psychogeography, I examine the ways landscapes can be read from a writerly perspective. I look to Maurice Merleau-Ponty’s theories of embodied perception, and the landscape writing of Robert Macfarlane, to explain how landscape is read physically and sensually, as well as visually, and how this informs my methodology.

In part two, ‘Nuclear Psychogeography in Practice’, I examine in detail my psychogeographic practice within my chosen landscapes. I begin with Wylfa, analysing the ways it is both seen and unseen in the landscape due to its design and the secretive nature of the nuclear industry. I discuss my collaborative work with a group of visual artists who were developing an exhibition exploring the relationship between Wylfa and its surrounding landscape, and then describe how my psychogeographic practice informed specific creative decisions.

Beginning my study of Chernobyl, I explain how my online research regarding the landscape of Chernobyl led me to consider how digital representations of the Exclusion Zone can direct the reading of the landscape. Using Guy Debord's critique of 'The Spectacle', the western phenomena in which representation takes precedence over authentic social life (Debord, 1994), I show how representations of Chernobyl, in the form of photographs and websites, are commodified and contribute to the nuclear spectacle online, which in turn informs emotional responses to the concept of nuclear landscapes. I examine how photographs are read, and can be misread, leading to a fractured concept of the landscape of Chernobyl, and potentially unreliable emotional responses. Recognising the importance of the spectacle of Chernobyl, however, as a cultural phenomenon, I explain how I used photography as a source of tension and character development in the novel, and how the images described in the novel act as a bridge between the contiguous storylines and landscapes.

In order to see beyond the online spectacle of Chernobyl, I visited the Exclusion Zone and engaged in the practice of a *dérive*. I examine how this drift through varied geographical and nuclear ambiances, letting myself 'be drawn by the attractions of the terrain and the encounters found there' (Debord, 1958: 62), generated new perspectives and data for the novel. I recognise how the desire to visit and capture data directly was informed by my reading of Bergson's theories of intuition and duration. I explain how the *dérive* was directed by the nuclearity of the Exclusion Zone, and how I developed the character of Helen through the study of imagined responses to the various places I encountered. A specific feature of embodied experience within the Exclusion Zone is the use of dosimeters to monitor levels of ionizing radiation in the environment. As radiation cannot be perceived bodily the dosimeter is the mediating force for all encounters there. I examine how my

psychogeographic study of the dosimeter's role in the tour experience was used as a source of tension regarding my characters' perceptions of risk and danger in the novel, and enabled me to show the diversity of embodied responses to the Exclusion Zone.

Documenting the *dérive* through photography and note taking caused me to question whether my quest for immersion in the landscape was interrupted or denied by the need, as a researcher/writer to record my thoughts, feelings and ideas for the novel. I consider how Bergson and Merleau-Ponty acknowledge and integrate intuition and analytical thought, whilst examining how the specific nature of a visit to the Exclusion Zone generates knowledge through intrinsic fluctuations between immersion in experience and simultaneous considerations of personal and cultural understandings. I describe how this tension was embedded within the novel as a means of depicting a realist narrative of embodied experience of this specific site of tourism and culture.

In the penultimate section I examine how my documentation of the trip developed, moving from photographing iconic imagery associated with the spectacle of Chernobyl to a textural mapping of the details of places encountered during the *dérive*. I describe how I created visual and sensory maps of my self-authored experience of the Exclusion Zone, in much the same way the Situationist International group created emotional and experiential maps of Paris in the 1950s and 60s from their own psychogeographic practice and *dérives*. I explain how these intensely personal maps of emotional and sensory responses informed my writing processes and helped me to structure the text.

During the writing of the novel and these poetics, I recognised a central theme of attachment to landscape and homesickness permeating the writing and critical thinking. This highlighted the complex relationship both I, and others, have with

nuclear landscapes, specifically concerning the risks nuclear power stations pose to both land use and those whose identities are closely linked to specific territories. As psychogeography is concerned with emotions and behaviours, personal connection to certain landscapes cannot be ignored. The tensions arising from this homesickness, I realise, fuelled my writing. In the final section I examine the meaning of the Welsh word *hiraeth*, and how recognising the ways in which landscape forms identity as much as identity informs perceptions of landscapes shaped the narrative and characters in *Borderlands*.

I chose to use autoethnography to explore my methodology as this is ‘an approach to research and writing that seeks to describe and systematically analyse personal experience in order to understand cultural experience [...and] as a method, is both process and product’ (Ellis, Adams and Bochner, 2010: 1), mirroring the position of the novel as both research and outcome within the combined thesis. Both can be described as ‘genre(s) of writing and research that display multiple layers of consciousness, connecting the personal to the cultural’ (Ellis and Bochner, 2000: 739). To understand and frame my arguments, I use what Carolyn Ellis refers to as a ‘systematic sociological introspection’ (1999: 27), examining my own perceptions and emotional responses to landscapes and nuclearity as a product of the individual processing of meaning, as well as in relation to socially shared cognitions.

While there is some of what Bourke and Neilsen (2004) describe as ‘First Order Journal work’ (scenes from my trip, memories, and anecdotal accounts regarding my own perceptions of Wylfa and Chernobyl), care has been taken to ensure these do not ‘collapse into narcissism and endless auto-reflexivity’ (Bourke and Neilsen, 2004), but that they act merely to illustrate and create a vivid and visceral

link to the Second Order Journal work that makes up the body of the exegesis. Second Order Journal work is:

meta-writing. It is writing *about* writing, writing that is self-conscious, evaluative, critical. It is journal work that asks questions about process, product, praxis and practice. It is journal work that can be drawn on by other writers who wish to understand, evaluate or interrogate their *own* writing practices' (Bourke and Neilsen, 2004).

As such this exegesis seeks to bridge the gap between the personal and the theoretical, using the observations, analyses and creative work of other writers whose practice intersects my own where appropriate, but predominantly engaging with the central issues of my own research methodology and writing practice. The *Creative Writing Research Benchmark Statement* (Neale *et al*, 2018) says that 'reflection and critical insight may also be presented through inherently creative strategies that illuminate the main body of creative work or that are integrated within it,' (Neale *et al*, 2017: 8) and therefore, in part due to the autoethnographic approach taken, the style of writing in this poetics often merges formal academic writing with creative syntax, format and style.

Part One: The Journey Towards Nuclear Psychogeography

1.1 The Seeds for the Novel

Fingers pressed hard against the cold glass pane, my breath steaming the window, I watched the cherry blossom fall from the tree in our front garden and tried to work out what had changed. I was six years old and news of the Chernobyl disaster had just been broadcast, with a report stating that the radioactive fallout was being carried by the weather across Europe and to the UK. My mother, concerned for our health, said we couldn't play outside until she knew more. There were other children on the estate playing out, though, on bikes and with footballs, as if nothing was wrong. The sky was blue. I itched to run outside and collect the cherry blossom – to make it into confetti for a pretend wedding, to crush it into empty jam jars and make watery perfume. It drifted across the lawn in the Spring breeze. Drifted. Like the fallout from Chernobyl drifted across Europe.

The Chernobyl disaster occurred in the early hours of April 26th, 1986, and was the first level seven accident¹ in the global nuclear industry. There has been only one more since: Fukushima Daiichi in 2011. The incident at Chernobyl was initially unreported to the wider world, until a Swedish nuclear power station and a Danish nuclear research laboratory picked up readings of the radioactive fallout moving over Europe two days after the event. Eventually the details of the accident were confirmed by the Soviet authorities. I don't remember the date I first became aware of the

¹ The International Atomic Energy Agency categorise nuclear events using the International Nuclear and Radiological Event Scales (INES). This scale rates 'events that result in a release of radioactive material into the environment and the radiation exposure of workers and the public. [...] Events are rated at seven levels. The scale is logarithmic – that is, the severity of an event is about ten times greater for each increase in level of the scale. Events are considered in terms of: impact on people and the environment, impact on radiological barriers and control, and impact on defence in depth' (IAEA, 2019). Level seven is the highest rating: a major accident.

disaster, or stood at the window, but Samuel Osbourne's recent article in *The Independent*, drawing on government files released by the National Archives, shows that the UK Government's response to the incoming radioactivity was poorly managed. It wasn't until the May Bank Holiday weekend that contamination was detected and reported in the UK and the general public began to react, with phone lines jammed and inconsistent advice given out in the absence of a pre-existing plan (Osbourne, 2017). Perhaps this explains my mother's caution, and her desire to wait for clear advice before risking our exposure.

While I remember vividly the images of the shattered reactor on our little black and white television, I doubt that at the age of six I was able to understand much of the reports. I was scared, however. I felt a shift in my perception of the outside world, an awareness of danger beyond the usual risks of falling off my bike or out of a tree, of fights between kids, and the cars on the main road. This was something altogether more complicated and terrifying due to its invisibility. The cherry tree and sky looked normal, but I knew that somehow, they weren't anymore.

The novel *Accident*, by the German author Christa Wolf (1989), begins with a description of the view of a garden, and of cherry trees, from the narrative viewpoint of her protagonist, a single woman going about her daily routine while her brother undergoes brain surgery and the news of the Chernobyl disaster is broadcast. Like my child self, the protagonist is situated at a distance from the event, hearing about it on the radio and in short bursts throughout the day, and she similarly undergoes a shift in perception regarding familiar spaces in relation to transnational threat, explaining:

On a day about which I cannot write in the present tense, the cherry trees will have been in blossom. I will have avoided thinking, "exploded," the cherry trees have exploded, although only one year earlier I could not only think it but also say it readily, if not entirely without conviction. The green is exploding. Never would such a sentence have been more appropriate in

describing the progress of nature than this year, in this spring heat, following that endlessly long winter (Wolf, 1989: 3).

That the view of cherry trees ‘exploding’ marks the beginning of this shift in perception for the adult protagonist, as it did for me as a child, is perhaps unsurprising given the time of year in which the disaster occurred. However, it is the tension immediately evident in the narrator’s emotional response to the sight that resonates with me. The opening words of Wolf’s novel set the tone of the whole story, initiating the sense that something has changed irrevocably; that not only the way landscape and nature is perceived has been altered, but that the very words we might choose to use when describing our relationship with landscape have mutated in meaning and taken on new inferences. As the writer Robert Macfarlane states:

language doesn’t just register experience, it produces it. The contours and colours of words are inseparable from the feelings we create in relation to situations, to others and to places (Macfarlane, 2016a: 25-26).

In Wolf’s novel the narrator is registering the defamiliarization of both a familiar view and a familiar verb that has previously been used to describe that view, and in doing so produces knowledge in the reader that both now have a new significance in the context of the accident. Consequently, feelings experienced in relation to situation and place are disrupted. What follows in the rest of the novel is an intimate exploration of the protagonist’s subjective experience as she undergoes a renegotiation of place and perception and struggles to define through language the emotions emerging from this flux.

The response of the protagonist in *Accident* speaks to me, and reading it now I can identify the ways in which the Chernobyl disaster changed the way I saw the world; whenever I open the book and read that first page I am transported back to that

window, aged six, staring into the blue sky and desperately trying to make out a cloud of something black, or particles in the air. When the Chernobyl disaster occurred, my age and situation living in a small Nottinghamshire mining community meant my knowledge of nuclear power was sparse. There are photographs of me as a toddler in a bright yellow t-shirt with an orange sun on the front and the slogan *Nuclear Power? No Thanks!*, but I knew energy was made from coal, dug out of the ground and burned in the grate to provide warmth and hot water. The immediate risks from this energy source - dust, smoke, fire - were obvious and tangible to me, even as a young child. Like Wolf's protagonist on hearing about the accident, I was wondering how 'a sky such as this, pure blue' suddenly had an ominous feel to it, and only as an adult recognised that 'it is only the suspicion gnawing within [me] that colours the innocent sky such a poisonous shade' (Wolf, 1989: 27). I remember checking my skin for blisters for months afterwards whenever it rained. Pausing occasionally before sucking the nectar from the flowering honey-nettles² in the garden in case they were dangerous. Reflecting on these memories now I can see they involved me renegotiating my interactions with my own small world. I can state with confidence that the journey towards writing this novel began at that window when I was six, because that defining moment in my life seeded my interest in, and artistic responses to, nuclear landscapes.

1.2 Synthesising Experience and Practice

For many years I have attempted to trace patterns and discern meaning from my memories of the Chernobyl disaster, and from my emotional responses to Wylfa and

² This is what we called *Lamium album*, or white dead-nettles, as children.

its surrounding landscapes. I had written about Chernobyl and landscapes containing nuclear power stations in my short fiction and non-fiction research (Holloway, 2011, 2013, 2014, 2015, 2016a-b) prior to embarking on doctoral study, drawing on historical accounts of events like 3-Mile Island as research for the narratives. However, for this research, I wanted to re-engage with my initial feelings of anxiety and look more closely at the realities of living close to a nuclear power station, developing a structured narrative that would explore how these landscapes inform character and action points within a story. Robert Olen Butler's (2005) transcribed lectures on the process of writing fiction explain that 'as an artist, like everyone else of this planet, you encounter the world out there primarily in your bodies, moment to moment through your senses' (Butler, 2005: 11), but that if we live only in the moment these sensory experiences give the impression of chaos. However, he goes on to state that artists 'have an intuition that behind the chaos is meaning; behind the flux of moment-to-moment experience there is deep and abiding order' (Butler, 2005: 11). The risk, he warns, is that by seeking out this order and meaning the emotional response is lost to abstractions and analytical thought, a mode of thought that strips the initial sensory response of power. Instead, Butler suggests, the artist feels more comfortable returning to the way things were first encountered:

selecting from that sensual moment-to-moment experience, picking out bits and pieces of it, re-shaping it, [recombining] it into an object that a reader in turn encounters as if it were experience itself...Only in this way, by shaping and ordering experience into an art object, is the artist able to express her deep intuition of order (Butler, 2005: 12).

Researching the events and legacy of Chernobyl, I often found it easy to fall foul of the risks Butler describes. I would get distracted with facts and multi-disciplinary accounts of nuclear disaster, seeking the wrong kind of meaning, sometimes seeking

answers, that were not necessarily related to my writing practice but were pertinent to the issues informing it. Equally I knew that within my thirst for facts and information there were sensual and emotional responses to the landscape around Wylfa that stuck in my mind, and that in them lurked some artistic order. Therefore, I began developing a research method for the novel that would capture my sensory responses and refocus my attention away from the next news story and towards an exploration of how nuclear landscapes are experienced, and the effects they have on the individual.

In 2015 I was invited to a Nuclear Arts Symposium in Oxford that showcased the developing work of a group of artists who were working on an exhibition called *Power in the Land* (Grove-White, 2016b), an exploration of artistic responses to Wylfa nuclear power station and its relationship to the surrounding landscape through photography, film, sculpture and digital painting. I had recently begun collaborating with these artists to curate a commissioned special feature for the *New Welsh Review* (Holloway, 2016a) that included my own essay 'Follow the Pylons' (Holloway, 2016b), and responses to the site from the poets Carol Rumens, Alys Conran and Phil Bowen who I had invited to work with me.

The symposium included speakers from the nuclear industry and the artists themselves, but the most influential insight I gained that night came from Ele Carpenter, a curator and writer in politicised art with a special interest in nuclear art. Carpenter gently debunked much of the industry professionals' stock reassurances on nuclear safety both short and long term by giving a wider, more holistic view of nuclear issues. She illustrated her discourse by discussing ongoing art projects such as *Don't Follow the Wind* (Arts Catalyst, 2018), a collaborative project creating an art exhibition within the Exclusion Zone around Fukushima Daiichi, and the connected exhibition *Perpetual Uncertainty* (Carpenter, 2018) which examined the complex

nature of deep time radiation and artistic responses to the nuclear age. She concluded her talk with the summation that regarding the complex issues of nuclearity³ ‘there are no facts, only concerns’ (Carpenter, 2015). This statement, as well as her talk more generally, highlighted to me the subjective nature of responses to nuclearity: concerns are related to the self, the individual, and are emotional responses to external stimuli.

In my own writing processes I have long been aware of the etymology of the word *inspiration*. Defined by critic Rob Pope (2005) as carrying:

the general sense of being moved and stirred by a powerful force other than oneself (divine, human, natural or otherwise), its root sense, from Latin *in-spirato*, is of being breathed into’ (Pope, 2005: 91, italics in original).

There is a suggestion here that the writer, being breathed into, is a vessel for an external force which directs the resulting creative actions and outputs, at times without the writer’s conscious awareness. This external force could be defined as the situation the writer/artist resides in, culturally and physically, although there are undoubtedly other interpretations. Defining the external force as the writer’s situation, however, aligns it with sociological theories of creativity, such as those explored by critic Janet Wolff, who states:

The sociology of art enables us to see that artistic practice is situated practice, the mediation of aesthetic codes, what Bourdieu calls the ‘cultural unconscious’, and ideological, social and material processes and institutions. At the same time, it insists that we do not lose sight of the artist as the locus of this mediation and the facilitator of its expression (Wolff, 1993: 137).

³ ‘Nuclearity’ can be defined as both the condition or quality of being nuclear/irradiated, and ‘a shifting set of assumptions held by individual citizens on the danger of nuclear technology, assumptions that [are] rooted firmly in context and which circulated in, and [are] shaped by, national discourse’ (Hogg, 2012: 535).

Wolff's arguments propose a holistic view of creativity, focusing on the many influences affecting the processes of production, and recognising the relationship between external stimuli and internal agency within the artist. Both Wolff's recognition of the artist as mediator for external input, and Carpenter's assertion that 'there are no facts, only concerns' (Carpenter, 2015), reinforce the notion that perception, and resulting artistic practice, is situated: it is located in the individual but responsive to the wider cultural and sociological environment in which s/he resides.

There were some things I could not change about my situation and the inputs they produced in relation to my writing this novel. I was acutely aware that I could not enter this research with a clear mind, able to observe objectively and collect facts and data during my interactions with the landscapes of Wylfa and Chernobyl. I was already a nuclear being before I undertook my landscape studies, and a writer, and I knew this would influence my experience. I exist not only in the Anthropocene⁴ (Macfarlane, 2016b), but more specifically in the Nuclear Anthropocene – a moment timestamped by the detonation of the first atomic bomb and the resulting presence of man-made isotopes in the ground (and by extension the bodies of those living there) (Lewis & Maslin, 2015; Miller, 2016). I have experienced radioactive penetration of my body by x-rays and CT scans, for which iodine-based compounds have been injected into my bloodstream to act as a contrast dye in the imaging process. My mind, body and interactions with nuclear landscapes are intrinsically meshed with radioactivity, and my visit to Ukraine was imbued with the weight of this knowledge, as well as the weight of my childhood anxieties regarding the Chernobyl disaster itself. Similarly, my relationship with the landscape around Wylfa is intrinsically linked to my

⁴ The current geological age, recognised as the time period in which human activity has impacted climate and the environment leading to lasting geological and biological implications.

knowledge and feelings of anxiety regarding nuclear disaster, and the tensions regarding the re-shaping of the landscape in North Anglesey for a new nuclear power station: Wylfa B. However, by acknowledging my own situatedness, and the cultural and sociological framework within which I was working, I was able to utilise it in the design and execution of my research and practice.

Creative Writing research is an established methodology in which practitioner-researchers carry out their research inquiries through the combined production of creative work and exploration of process in exegesis form. It does not make claims to objectivity (Nelson 2013: 19). In fact:

in the role of “practitioner-researcher”, subjectivity, involvement, reflexivity is acknowledged; the interaction of the researcher with the research material is recognised. Knowledge is negotiated – inter-subjective, context bound, and is a result of personal construction (Gray and Malins 2004: 21).

Donna Haraway too recognises the value of situated knowledge, arguing:

for politics and epistemologies of location, positioning, and situating, [and] for a view from body, always a complex, contradictory, structuring and structured body, versus the view from above, from nowhere, from simplicity (Haraway, 1988: 589).

I was encouraged to see my own situatedness - culturally, sociologically and also individually - not as detrimental to my practice, but as a key to compiling data for the novel. By examining my own responses to the landscapes of Chernobyl and Wylfa I could generate knowledge that could inform the development of characters experiencing complex responses to the places I wanted to depict. This knowledge could also inform the narrative, helping me develop a structure that would reflect the multifaceted issues around nuclear power. As the Creative Writing theorist Jenn Webb states, while the whole world is a potential data source for the writer, inquiry can only

be contained by ‘the way we shape our research questions and by the focus of our story’ (Webb, 2015: 127), and my situatedness provided a locus for both to develop.

Returning to the notion of inspiration, however, I am aware that while my position as a nuclear being with prior experience and knowledge of nuclearity could be described as the situation ‘breathing into me,’ providing me with input for creative output, as both Wolff and Pope point out, there is agency in the creative process. Pope states that creative inspiration can, literally or metaphorically, be ‘induced by the kinds of breathing exercises practiced in yoga and other forms of meditation’ (Pope, 2005: 92). I believe these ‘breathing exercises’ can take many forms: research, reading, contemplation, creative exercises in groups or alone, for example. The writer can consciously direct their exposure to, and awareness of, specific stimuli to generate creative response, and therefore has some control over the process of ‘breathing in’. This awareness of my role as mediator for input and resulting artist output, and the knowledge that I could direct my sources of inspiration, signposted the way towards developing a research methodology for the novel. As the *Creative Writing Research Benchmark Statement* says:

Creative Writing is not primarily a vehicle for what may be termed “factual” knowledge, but a synthesizing process that brings about both knowledge and emotional awareness through imaginative interpretation and representation of experience (Neale *et al*, 2018: 5).

I therefore had the freedom to synthesise existing, and planned, situated responses to nuclearity with imagined characters and their responses to their own situations.

1.3 Psychogeography as Practice-led Methodology

The writer Eudora Welty's essay 'Place in Fiction' (1994) begins by describing setting as being classed as 'the lesser angel' in narratives, often relegated behind 'character, plot, symbolic meaning, and so on,' and whose influence 'might be thought so modest a one that it can be taken for granted' (Welty, 1994: 1). However, she goes on to explain that in her view place is not only intrinsic to the readers' experience of the stories, becoming symbiotically bound together in the cultural consciousness of the readers (*Wuthering Heights* and the Yorkshire Moors for example), but is also intrinsic to the writing process itself. To Welty:

place absorbs our earliest notice and attention, it bestows on us [writers] our original awareness; and our critical powers spring up from the study of it and the growth of experience inside it (Welty, 1994: 15).

In terms of my research, Welty's assertion that writers pay attention to both the landscape and the way it affects the individual connects directly to Guy Debord's definition of psychogeography:

the study of the precise laws and specific effects of the geographical environment, whether consciously organised or not, on the emotions and behaviour of individuals (Debord, 1955: 8).

I recognise this link in my own writing practice: when I write, the ideas for stories - the characters, plots, symbolic meanings and so on - are usually fomented in my own emotional or intellectual response to certain aspects of landscape or place, whether that be geographical and encompassing the physical features of a region or area, or localised and responsive to individual aspects of architecture, design or a sense of home. For example, my short story 'A Sudden Rush of Air' published by *Litro* (Holloway, 2017), has its conception in my observation of anti-bird spikes fitted to the

window-ledges of buildings in my local town to prevent pigeons settling. Noticing this small physical attribute in a precise situation became the seed for the story, and also featured in the piece as a central image and basis for symbolic meaning, action and character response. The 'lesser angel' of place thus acted as a creative source for those elements of the story which Welty identifies as taking precedence in the text.

This does not mean my stories are autobiographical in nature, or memoir even, but that they are responsive to location, and the specific attributes of place. As the author Alice Munro explains when discussing her use of real details and places in her writing process, my personal observations are 'the starter dough' (Munro, 1982: 225) for a story to emerge. Like her I mix them with other inputs – inspirations I have gathered along the way or that I seek out specifically - so that I can breathe them out into the story I am constructing:

some of the material I have lying around already, in memories and observations, and some I invent, and some I have to go diligently looking for (factual details), while some is dumped in my lap (anecdotes, bits of speech) [sic] (Munro, 1982: 224).

My intention with *Borderlands* was to study and then write about landscape in depth, as the core of the novel, with setting not a 'lesser angel' but rather as a defining element in my characters' lives, exploring the ways in which, as Welty says:

It is by the nature of itself that fiction is all bound up in the local. The internal reason for that is surely that feelings are bound up in place. [...] The truth is, fiction depends for its life on place. Location is the crossroads of circumstance, the proving ground of "What happened? Who's here? Who's coming?" (Welty, 1994: 1).

Applying these questions to the nuclear landscapes of Chernobyl and Wylfa revealed to me some ways in which emotion is bound up in these places, and how it might be explored through fiction. The presence of Wylfa nuclear power station in a small

community on Anglesey, and the preparations and plans for a second power station, Wylfa B (currently suspended, but ongoing during the writing of *Borderlands*), have generated strong pro- and anti-nuclear responses in the local area. Living and working in this area between 1998 and 2015, I have witnessed first-hand, and through local press reports, the debates and negotiations taking place regarding the propositions for Wylfa B. I have friends directly affected by the plans and eager to discuss the issues. I myself have been to surgeries held by local MPs and Horizon (the company contracted to develop Wylfa B) and have witnessed the emotional responses of those involved in the debates. When considering Welty's questions, I answer 'who's here?' with 'residents', and 'who's coming?' with 'developers.'

The answers for Chernobyl are more complex. The response I immediately think of to the question 'who's coming?' (or to rephrase it, 'what's coming?') is 'radiation.' The landscape of Chernobyl is intrinsically linked in my mind to the disaster and the circumstances of the people affected. The thousands of residents whose displacement from, and in some cases return to, their homes demonstrates powerful emotional connections to landscape (Alexievich, 2006). Whilst the disaster challenged attitudes globally to nuclear power, like the events of Three-Mile Island⁵ before it, it also forced a reconsideration of safety for those in close proximity to the nuclear power stations themselves. Serhii Plohy, a historian who lived just beyond the Iron Curtain during the 1980's, describes how the disaster led to one of Ukraine's most celebrated writers, Oles Honchar, to declare that 'Chernobyl had changed how [Ukrainian] writers "related to the world"' (Ploky, 2018: 289). Examining the literary

⁵ The accident at Three-Mile Island, Pennsylvania 1979, was categorised at level 5 on the INES. While there were no reported deaths or health consequences apart from stress, the event did impact on safety procedures and public relations regarding nuclear power as a safe source of energy. 'Public confidence in nuclear energy, particularly in USA, declined sharply following the Three Mile Island accident. It was a major cause of the decline in nuclear construction through the 1980s and 1990s' (World Nuclear Association, 2019).

responses to nuclear power before and after the event Plohky found that writers such as the poet Ivan Drach, who had previously extolled the virtues of the nuclear age, began to ‘repent’ and return to ‘the theme of Chernobyl and nuclear power with a different set of feelings and images’ (Plohky, 2018: 292). Where previously Drach had married a personification of the river Pripyat to a newcomer called Atom within his early poetry, in his post-disaster poetic novel *Madonna of Chernobyl* (1998) he draws on biblical imagery to show the crucifixion of the land via radiation (Plohky, 2018: 292).

Writers with Soviet heritage, and those living in the path of the weather-borne contamination, responded to the disaster with work exploring renegotiations of place, politics, and sociology (Voznesenskaya, 1987, Gubaryev, 1987, Pohl, 1987). As critic Ursula Heise, states, many of the literary texts that address the Chernobyl crisis:

focus primarily on the fate of local residents and rescue workers who were directly exposed to radiation or evacuated from their homes in the immediate aftermath of the disaster (Heise, 2006: 182).

In these stories ‘emphasis lies on the way in which catastrophe undermines everyday life and the assumptions and expectations that shape it’ (Heise, 2006; 182). These texts, and those that have followed over the years, including *Voices From Chernobyl* (2006) by Nobel Prize winning Svetlana Alexievich and *All That is Solid Melts into Air* (2014) by the Irish writer Darragh McKeon, similarly explore the way individuals relate to place, and how the disaster forced a new way of looking at, and interacting with, familiar landscapes and routines.

Given the focus on the disaster itself in so many texts, it is understandable, therefore, that my initial response to Welty’s question ‘who’s coming?’, applied to Chernobyl, was to see radiation as the thing that was coming, the disruptive force or

inciting conflict within both the real events and the literary responses. However, I wanted to write a realist novel examining not the disaster itself, or its immediate aftermath, but which explored emotional and behavioural responses to Chernobyl's contemporary Exclusion Zone. By comparing these responses to those generated within the landscape around Wylfa/Wylfa B, I could study both landscapes and draw on the knowledge generated to find my own inciting conflicts regarding nuclearity.

I decided to develop a psychogeographic methodology that would be directed by spending time in the landscapes around Wylfa and Chernobyl as a means of generating and then studying emotional and behavioural responses to these spaces. When conducting practice-led research, the 'methodology should be responsive, driven by the requirements of practice and the creative dynamic of the art/design work' (Gray and Malins 2004: 72), and having identified links between my research interests and the practice of psychogeography I decided that a close study of the landscapes of Wylfa and Chernobyl would fulfil my research goal. The *Creative Writing Research Benchmark Statement* states that 'research may include experiential learning, whereby creative writers put themselves in particular situations or undergo experiences in order to generate writing' (Neale *et al*, 2018: 5), which aligns with my decision to undertake psychogeographic practice within the nuclear landscapes I had chosen to study, creating situations that facilitated the study of these places first hand. From these situations I could explore specifically how the nuclearity of these landscapes affected me, wider communities, and by extension my characters and the form of the novel.

In developing my methodology I decided to consider Debord's definition of psychogeography within the wider practice of the Situationists International (SI), not with the intention of adopting their principles or copying their actions, but of drawing

on and adapting elements of their practice into my research where I felt it would benefit my creative intentions.

The SI was formed by Guy Debord in the mid-1950s from groups of Avant Garde artists, intellectuals and political theorists. The writings and actions of the SI, and particularly Debord, locate psychogeographic practice specifically in the urban environment, and imbue it with political weight. It originated as a method of critiquing urban planning, of observing and defying the corralling of space and time into functional zones. The *dérive*, a term coined to describe a drift or arbitrarily planned movement through cities to evoke awareness and responses to the specifics of place, was one of the SI's methods of reclaiming of power from the capitalist state, and a mode of play that could feed artistic minds (Debord, 1955 and 1958, in Knabb, 2006: 8-12 and 62-66; Ridgeway, 2014; and Matthews, 2005). My intention to observe how the presence of nuclear power stations informs behaviours in, and often access to, specific landscapes involves a reclamation of these locations as spaces that serve to inspire creative practice rather than merely sites of industry. The environments I have chosen to study, however, cannot be defined as urban. Instead, they are spaces where the industrial meets the rural; nuclear power stations are invariably situated in relatively isolated rural areas, usually by lakes or the sea for cooling water (Grove-White, 2015: 95), and in Wylfa's case on the coastline of Anglesey, bordering an Area of Outstanding Natural Beauty (AONB). These landscapes are more like an extreme version of what the activist and writer Marian Shoard terms 'edgelands', only rather than being at the blurred edges of cities, 'characterised by rubbish tips and warehouses, superstores and derelict industrial plants, office parks and gypsy encampments, golf courses, allotments and fragmented, frequently scruffy, farmland' (Shoard, 2017), these particular landscapes sit at the very end of the strutting strings of pylons that

connect the power source to the communities they serve, and juxtapose working farmland and picturesque seascapes with vast high-tech, high-security buildings that dominate the horizon (see figures 1 and 4, pp. 88 and 91 below).

Wylfa and Chernobyl are not comparable in terms of success: one has the worst safety record in history, and the other provided electricity beyond its planned operational lifespan - despite a potentially catastrophic accident in 1993 that led to changes in safety policies (Royal Academy of Engineering, n.d.: 43 and 62). No nuclear power station is completely risk-free during operation or decommissioning, and so throughout Wylfa's actual operational lifespan (1971-2015), and for the next fifty years or more, anxieties regarding real or potential incidents that could release radiological contamination into the environment and local communities (or further) were/are legitimate. During my preparations for Doctoral study, plans for Wylfa B were generating a change in the landscape of North Anglesey that put me in mind of the evacuated villages of the Exclusion Zone. During the writing of *Borderlands* (2015-2019) I visited the landscape around Wylfa numerous times, and once took a full site tour of the area being prepared for Wylfa B. Each trip showed more houses being emptied and torn down, land being cordoned off, trees being cleared and banks of earth appearing, signs of people and communities displaced. One of the earliest decisions I made regarding the form of the novel was to connect these two landscapes via a contiguous narrative, meaning I could explore how they spoke to each other. I wanted to see to what extent psychogeographic responses to the two places might be similar, or trigger reflections on one another, and how perceptions of one place might alter perceptions of the other. This, I believed, would fulfil my desire to place setting at the heart of the narrative by telling the story of the landscapes through the characters' engagements and perceptual responses.

1.4 Reading Landscape for writing

Using Psychogeography as a methodology for writing about the landscapes of Wylfa/Wylfa B and Chernobyl demanded I do more than look at them and describe their colours and shapes in the text. The notion of looking implies an occularcentric, externalised conception of landscape, positioning it as scenery to be gazed on from a distance, or the background to a character's story arc. However, as the Creative Writing theorist Craig Jordan-Baker explains, landscapes, whether real or fictional, are also 'places human communities abide in and work with,' emphasising 'the existence of an emplaced and practiced-based conception' (Jordan-Baker, 2019: 3). I felt that to understand the complexities of landscape perception and find a way to depict it as something that informs my characters' emotions and behaviours I would need to negotiate the 'tension between proximity and distance, body and mind, sensuous immersion and detached observation' (Wylie, 2007: 1-2) inherent in landscape study, considering carefully how the individual conceives of and engages with landscape spatially and temporally.

I did this by learning to read the landscape, and read it in particular way - in a writerly way. In *On Creative Writing*, the author and Creative Writing theorist Graeme Harper discusses the ways in which the writer reads the world around them as a resource for new work, explaining we read the weather, the tides and temperatures, the behaviour of others, the shape and pattern of the world around us, and situations. Specifically, he notes that 'reading' means 'examining meaning', stating:

it relates to receiving and [...] comprehending. It can mean to gain knowledge from something, to examine and decide upon intention. It's about discerning, attempting to grasp, interpreting (Harper, 2010: 25).

Harper's definition of reading the world positions it in the writing process as an active engagement with external information, perhaps one of Pope's 'breathing exercises' (Pope, 2005: 92). Approaching the landscapes of Wylfa/Wylfa B and Chernobyl this way I read them to seek out meaning, to discern how the colours and shapes are composed and what knowledge they generated in terms of symbolism or imagery, and how the topography and design of the buildings directed physical, emplaced behaviours in the visitors and inhabitants (including myself). I began grasping at an interpretation of place as part of wider pattern of connection between people, community, industry and nuclearity.

Reading landscape is not something that is done solely with the eyes; it is important to recognise the body, too, as a tool for perception and interpretation of place. MacFarlane reminds us of this, stating:

we have come to forget that our minds are shaped by the bodily experience of being in the world – its spaces, textures, sounds, smells and habits (MacFarlane, 2016a: 74).

MacFarlane's statement builds on the phenomenological approach to perception posited by the philosopher Maurice Merleau-Ponty, whose anti-Cartesian stance reunited the mind and body as the locus for knowledge of the world, arguing that knowledge is felt within the body in a way that precedes cognition and informs understanding. I recognise that my own creative and critical interests have always been related to the translation of this felt knowledge into fiction, specifically ways in which sensory inputs inform psychological states and generates the atmosphere and tone of a piece of fiction. My own writerly actions frequently draw from physical, emotional and psychological data that I have banked from my own personal experience, and through which I explore the complexities of embodied experience. Merleau-Ponty

himself recognises that words are gestures of the body, positioning writing as an expression of existential meaning as experienced bodily and sensually (Merleau-Ponty, 1970: 181-183; Macfarlane, 2016a: 73-74; Tobin, 2012: 29). Choosing to hone in on this aspect of my writing practice by engaging in psychogeography I could read the nuclear environments around me in a multi-modal way, generating creative writing from an embodied, emplaced experience of a specific place.

By suspending the ‘usual motives for movement and action’ (Debord, 1958: 62) such as work or commuting, for example, and instead physically moving through a space for the sake of experiencing the space itself as Debord suggests in his essay ‘Theory of the Dérive’ (Debord, 1958: 62), the body reads and responds to the varied ambiances that are created by a mixture of senses – smell, temperature, touch and even taste – as well as sight. This practice can generate knowledge of a specific place or places that can in turn inform cognitive processes and ‘sharpen [the writer’s] skills – of description, evocation of atmosphere, detailing minutiae, making connections – to give greater authenticity to [...] writing’ (Overall, 2015: 26). As to what this ‘authenticity’ may be is open to debate. Whether anything can be described as truly authentic when all interpretations and representations of place are embedded in codes, signs and symbols is not the focus here. For the purpose of this analysis I choose to interpret the author and critic Sonia Overall’s use of the word to mean the author’s subjective observations of real places in the moment, that in turn provide the detailed descriptions with which an author might build complex and convincing fictional worlds (see: figure 4, p. 91; figure 7, p. 94; and figures 12-44, pp. 96-121 below for examples of my observations presented as photographs and notes, and links to novel).

In terms of my use of psychogeography as a methodology for writing, I chose to acknowledge the impact that viewing nuclear power stations has on the individual,

while also seeking to examine embodied sensual experience within the landscapes and communities of Wylfa/Wylfa B and Chernobyl. Writers such as Jenn Ashworth and Sarah Hall, who evoke a strong sense of place as both context for narrative and an inherent part of the narratives and character behaviours, have shown themselves to be aware of the need to look, and look closely, but also to experience. Hall states, when discussing her writing practice:

I'm interested in the working nature of the land as well as its resistance to what we place upon it, metaphysically, and sometimes physically. This is what I've grown up with when it comes to Cumbria – farming, sheep, rain, difficulties travelling, self-sufficiency, obduracy, respect (Hall, 2009).

She identifies her own observations and experience of landscape as a significant source for narrative and action. What to me is particularly relevant is that she notes not only things which can be seen, but also modes of interaction with the landscape that give rich data for developing character and situation in a narrative, demonstrating an approach to reading landscape and the behaviours and responses of individuals within it that aligns with my own approach for this novel.

Similarly, Ashworth, when discussing her process of writing *Fell* (2016), describes the novel as 'a diary of looking – of what I paid attention to during that time' (Ashworth, 2017), going on to situate the development of the novel firmly in her observations and experience of a specific landscape:

I can say that *Fell* grew from a particular place. The unbiddable, uncanny, shifting sand of Morecambe Bay intrigued me because I was frightened of it. I had been taught to be frightened of it, to watch the sands, to never walk there alone. The bay holds its own dark histories of flux and danger. It is a place of work and leisure and rest and peril. It demanded its place not as a mere backdrop for action, but one of the novel's most shifty characters (Ashworth, 2017).

Ashworth's description of fear of a particular landscape as the initial creative force for action resonates with my own reasons for writing about nuclear power, and specifically Chernobyl. She locates her fear of Morecambe Bay within a culturally taught relationship, highlighting her own social, cultural and personal situatedness within her process of writing *Fell*.

Like Ashworth and Hall, I began paying attention to the specific landscapes I had chosen to write about, seeking knowledge and meaning in their form and use. I secured funding for a research trip to Chernobyl's Exclusion Zone so that I could read the landscape directly, through all of my senses, and decided to return to the landscape of Wylfa/Wylfa B with the express intention of reading the landscape afresh as a psychogeographer, ready to be 'drawn by the attractions of the terrain and the encounters [I would] find there' (Debord, 1958: 62).

Part Two: Nuclear Psychogeography in Practice

2.1 Wylfa: Seen and Unseen

In deciding to split the narrative between Wylfa and Chernobyl, I knew I had a wealth of experiential data to draw on for the strand situated in North Wales; I moved there as a teenager and it felt like coming home. I would regularly swim in the sea and rivers, go rock climbing, hiking, and camping out. I came to know the pull of the water, the rhythm of the tides, the feel of sun-heated stone as I scaled a rock-face. Having worked on a farm in Derbyshire as a teenager, and continuing to help out friends with their smallholdings since, I know the visceral realities behind the bouncing lambs in Spring, the hardships and cruelty behind the pastoral idyll, and felt confident depicting the experience of crossing a river with a strong current, or delivering a lamb during a complicated birth. However, by situating the novel in the landscape around Wylfa, I realised I needed to consider more carefully the interplay between the nuclear power station as a visual feature within the landscape, and the experience of living close to and/or working there, with a specific focus on how these interrelate in terms of perceptions of nuclearity and risk.

In the past I had always avoided the north side of Anglesey purely because it had a nuclear power station situated there. However, in 2010 the company I worked for gained a contract with Magnox to provide their health and safety training, and I was asked to fulfil it. It was early morning the first time I saw Wylfa. My car was packed with resuscitation dolls, paperwork and bandages, and as I wound my way through the back lanes and villages of north Anglesey the sun was rising like a fiery orange warning over the fields. I crested a hill and Wylfa came into sight.

Solid blocks of concrete painted in grey and ochre, black and pale green.

Stark industrial threat set in a postcard view of the coast.

My hands were shaking on the steering wheel, my heart thumping. I started thinking about what I would do if there was an explosion that day. Would I have chance to get out of the training room and into my car? Drive away and discard my outer layers of clothes, cut my hair somewhere near the bridge before making my way home to my family? Would I be locked in? This was an extreme and unexpected reaction, undoubtedly rooted in my childhood memories and fears following the Chernobyl disaster. I told myself to stop being silly and drove on.

The day went on without event and as I drove home, relief easing my spine, I started thinking about why I'd had such a strong physical and emotional reaction. For the people I worked with that day, the experience of being close to the reactors was nothing special. For me, everything was new and demanded attention: the safety warning signs, the guards and their semi-automatic rifles, the shadow of the turbine hall blocking out the sun. At that specific time, although I experienced a hypersensitised response to the place, I wasn't actively reading Wylfa and its landscape as research for a novel. However, when I started writing *Borderlands* I realised that this privileged position of spending time training people involved in the operation of Wylfa gave me insights into attitudes and emotional responses to the site. While I wasn't allowed inside the operational sections of the site⁶, I worked closely with those who were. I was privy to watching simulations of reactor core management in their training rooms, was onsite during a safety lockdown (which was later revealed to be a drill), and spent hours walking the coastline and forests as close to the main reactor buildings as you can get without breaching security. Despite this privileged position, however, I was always positioned on the outside of the industry, my view semi-obstructed by

⁶ Tours of Wylfa were cancelled after 9/11 for security reasons and never reinstated.

red tape and regulation, highlighting for me the secretive nature of the nuclear industry, and the restrictions imposed on behaviour due to safety regulations. Movement onsite was directed by painted walkways, the use of Personal Protective Equipment (PPE), demands to hold handrails on the stairs and follow prescriptive safety procedures. Returning once my research was underway, I found my requests to visit and discuss the site were met with suspicion and rejection, further highlighting the ways in which the nuclear industry seeks to control access to and information about their operations.

Working alongside the *Power in the Land* initiative (Grove-White, 2016b), however, gave me the opportunity to stretch my reading skills regarding the landscape. My role as curator for ‘Power in the Land? Special Feature’ (Holloway, 2016a) involved myself, and the poets I recruited, joining the artists during workshopping days, taking walks with them in the landscape, and discussing their practice and how they interpreted their own readings of the landscape directly surrounding the power station. I then wrote an autoethnographic essay that merged my own observations of the landscape with a critique of the artists’ work (Holloway, 2016b). This collaborative practice enabled me to learn more about the design and positioning of Wylfa in the landscape around it, and how these specific features can direct perception of the buildings, and the industry more widely. This knowledge impacted directly on how I chose to examine the specific effects of this nuclear geographical environment on the emotions and behaviours of my developing characters.

Wylfa’s design was informed by the landscape artist Sylvia Crowe, who:

insisted on undertaking a landscape characterisation study prior to any other work, so that she fully understood the existing landscape context in advance of preparation of new designs (Grove-White, 2015: 96).

Her intentions for the power station's visibility and geographic setting are shown in her scoping text for the project:

The reactors will dominate their surroundings and must be recognised as a new focal element in the landscape... good colour relationships will be important... I do not advocate any partial sinking of the reactor towers as this might only destroy their drama and proportion, without concealing them from any relevant point [sic] (Crowe, 1962, cited in Grove-White, 2015: 98).

It is impossible to conceal a nuclear power station, although they are located in rural areas where fewer people reside or come into proximity with them. One of Wylfa's most interesting design features is the use of colour as a means of connecting it to the landscape in which it is situated. Care was taken to draw colours from the surrounding geographical features: the black rocks, the grey/green sea, the pale green lichens, and the mustard yellow gorse. In this way the eye is tricked into seeing it both as separate to and part of the natural formation of the headland. The colours are right for camouflage, but the shape is wrong; it is a building designed to be seen, but Crowe's vision of having it seen in a way in which it both stands out and merges with the landscape means that it exists perceptually in the liminal space between seen and unseen, familiar and unfamiliar. To those working within its fences, it is a workplace; to the general populous, due to the nature of nuclear power, it remains clandestine. Multi-arts facilitator and critic Ceri Jones states that the nuclear industry is one that at once purports to share information, while remaining shrouded in mystery, observing that to those of us outside the industry nuclear power stations themselves are 'visible from a distance, but we are not familiar with much about them apart from the architectural profile' (Jones, 2016: 53). It is, in part, this familiarity with Wylfa as a visual feature of the landscape, coupled with the latent knowledge that there is

something taking place inside that may or may not become harmful to the community, that interests me as a writer.

I recognised a visual and cultural liminality in Wylfa's relationship with its surrounding landscape, in which my feelings of disorientation and dislocation opened up possibilities for new perspectives (ICA, 2013, cited in McCrory, 2015). I decided that within my novel I would play not only with the different viewpoints of the sisters regarding emotional and behavioural responses to Wylfa, but would show shifts of perception within a single character's journey. I decided to develop a narrative strategy for portraying a switch from a habitual to a conscious view/experience of landscape in Jennifer's strand of the novel. Examining how the artists involved in *Power in the Land* read the landscape of Wylfa helped me to develop the following key strategies for challenging Jennifer's habitual experiences.

Chris Oakley digitally manipulates images of Wylfa in his film collection *Fata Morgana* to 'mimic atmospheric optical phenomena as a metaphor for these often contradictory aspects of nuclear power' (Oakley, 2015) (See figure 2, p. 89 below). His films show the site flickering in and out of focus, shimmering as in a heat haze, merging with and emerging from the headland, to 'investigate parallels between the fundamental invisibility of the nuclear fission process alongside the more visible cultural and political messages woven around the industry' (Oakley, 2015). Considering Oakley's approach, I set aside a number of days at different points within a calendar year to walk around the headlands either side of Wylfa and observe for myself the real-life phenomena behind his artistic representations. I took extensive notes on what I saw and felt, as well as how the features of the natural landscape directed my journey. Even though I had already visited these places before, I was aware that:

walking allows writers to access extensive, ever-evolving material. With a little Situationist attitude we can walk to see afresh, to defamiliarize the familiar, to challenge the autopilot of the everyday: to walk against the current (Overall, 2015: 15).

I knew that by studying the landscape again through psychogeographic practice I could find new knowledge to inform the narrative. As I walked up and down the coastline, Wylfa appeared above and disappeared behind the rock formations, the colours leapt out of the landscape, and when it was windy and my eyes watered it seemed to merge and blur, until I couldn't see where the sky and the reactors met, what was gorse and what was turbine hall. On one visit in the spring, I watched the heat haze turn the view to a shimmering dream like vision, similar to that which Oakley manipulated in *Fata Morgana*.

Feeling the unease generated by not quite being able to trust what I was seeing, I decided to use the design of Wylfa, specifically the way the colours merge with the natural seascape creating a mirage like view of the plant, as one tool for defamiliarizing Jennifer's perception of the site. I wanted this visual and emotional phenomenon to feature within the novel as a turning point in Jennifer's perceptual journey. Therefore, I sought out a point in the narrative where she would be drawn into looking at Wylfa from a physical and social position in the landscape outside of her usual routines, which in turn would force her to engage in a reassessment of what she was seeing, facilitating one aspect of a series of changes in both her emotional response and behaviour in regard to the site (see *Borderlands* Ch. 9, pp. 117-122). Jack, left in her care and demanding she break with her usual routines and ways of engaging with Wylfa due to his own needs and anxieties, became the catalyst for pushing her into specific places within the vicinity of Wylfa that she wouldn't otherwise visit. The combination of Jack's presence and the unfamiliar viewpoint,

described in chapter nine, leads to her reflecting not only on how she has previously viewed it, but recognising Wylfa's camouflage. I used this new awareness to underpin her narrative throughout the novel, interrupting her daily routines and dishabituating her emotional and behavioural responses to Wylfa's presence (*Borderlands* pp. 122, 134, 138, 146, 166, 193, 202, and 243).

Tim Skinner's artistic response to the plant, the film collection *Camouflage Stain* (Skinner, 2015), takes a different approach to exploring the secrecy of the nuclear industry, in which he turns his back on Wylfa. Acknowledging it does not want to be seen he finds it instead staining the landscape with its presence, and so focusses on the impact the plant has on the community, the headland and the perceptions of people in its vicinity. He uses layered images of colour and shape that depict how the plant seeps into the consciousness even if you are not looking at it (see figure 3, p. 90 below). Skinner's work encouraged me to widen my approach to reading Wylfa. It is hard not to look at the site, even when it is slipping in and out of focus on a warm day, but reading the landscape with my back to Wylfa - and with my body as well as my eyes - I noticed there was more than just the echo of the colours and the lines of pylons drawing my attention. There was the constant hum of the turbine hall as a steady baseline to the shifting notes of the wind and tidal rhythm of the sea against the rocks, a vibration felt deep within the cochlea and thorax. There was also the physical knowledge that it is there, all the time, even if you aren't looking at it. These observations became specific features of the landscape that returned throughout the writing of the novel and provided both a way to show Helen's awareness of Wylfa as an embodied presence (see *Borderlands* pp. 5, 21, 86, and 109) and structure for Jennifer's strand. As the narrative progressed it became important for Jennifer to see and feel that which Helen already experienced regarding Wylfa – a

sense of threat and latent power that is unknowable, even if you work there. Over the course of her journey it was important that she perceived, both visually and bodily, the ways in which the nuclear industry asks to be seen, while simultaneously concealing its practice.

Her perceptual journey, however, was the reverse of my own. I began my relationship with the landscape of Wylfa in a state of heightened emotional response, and over time and through repeated exposure and research became slightly more habituated to the site; teaching in the training rooms, drinking tea in the visitors centre café, going on a school trip with my child there, and conversing with those for whom safety drills and radiological waste management were routine. I visited Heysham nuclear power station in Lancashire, which offers guided tours to the public as part of a PR strategy to promote its safety record. This visit gave me insight into the ways in which behaviour is directed within the operational spaces of a nuclear power station, and the culture of safety its staff work within, providing valuable insight into the working routines both Jennifer and Ioan might undertake within the novel. While my visits to Wylfa and the one to Heysham retained a certain novelty, my anxieties lessened, which is the opposite of what I wanted to depict in the novel. Writing Jennifer's emotional and behavioural responses to Wylfa, then, involved drawing on my own psychogeographic experiences by picking out moments of interaction that had led to shifts in my perception and creating fictional situations in the narrative that could induce the opposite reaction in Jennifer. My intention was to incrementally defamiliarize her environment and force new emotional responses that over the course of the novel expose her own fallibilities and change her interactions with the power station and the landscape around it. She begins to see and feel the ways in which

nuclear power intersects community, geography, heritage and self. It is destabilising: she cannot go back to not seeing.

This reverse engineering of my own perceptual journey also highlighted for me the specific way writing fiction using a psychogeographic methodology demanded a cognitive split in terms of translating that which is seen/experienced into narrative. Wylie posits that a phenomenological approach to writing about the environment shows that the self and the world are ‘indissolubly entwined’ and that by extension, therefore, ‘text and the world are conceived and executed in terms of fusion’ (Wylie, 2010: 47). This approach places the writer who is concerned with landscape phenomenology as a subjective conduit for experience, with their own embodied experience of landscape then explored through evocative descriptions that express and elucidate often epiphanic experiences:

in which there occurs an apparent lacing together of perceiving self and perceived landscape, to a point where self and landscape, inner and outer worlds are intertwined (Wylie, 2010: 52).

This intertwining can be seen, for example, in the nature writing of Macfarlane, whose book *The Wild Places* (2010) explores his experience of trying to find wilderness landscapes in the North West. Summing up his revelation that every wild space he visited had at some point been intersected and altered by human life, he uses his experience of swimming in an estuary to explore his epiphany:

Where the salt and the fresh wove with one another, and the river lost itself gently into the increased space of the ocean, I swam briefly. Though I could not see how the two waters mingled, I could feel it all about me; the subtle jostle of currents, and the numberless small collisions of wave and ripple. [...] I thought of how the vision of wilderness with which I had begun my journey – inhuman, northern, remote – was starting to crumble from contact with the ground itself (Macfarlane, 2010: 126).

This merging of body, place, thoughts and words provides further testimony, as Wylie states of similar non-fiction texts, to ‘the central argument that human being is, fundamentally, embodied, involved being, “caught up in the fabric of the world” ’ (Wylie, 2010: 52, quoting Merleau-Ponty, 1962: 156).

However, writing fiction, I found my own phenomenological experience of landscape had to be extended to encompass and imagine the phenomenological experience of invented characters, creating multiple, often disparate, responses to the same space. Rather than describing my own experiences and response to Wylfa directly, I had to find my way inside the characters’ minds and evoke their experience of viewing and being immersed in landscape. In effect I was extending Debord’s definition of psychogeography to include creative actions, redefining it as ‘the study of the specific effects of the geographical environment [...] on the emotions and behaviour of **[imagined]** individuals’ (Debord, 1955: 8).

These creative actions changed my relationship with the landscape itself, to become a way of reading through looking at/interacting with landscape that developed within a liminal space between the self and other (invented) selves. This is more than a personal interaction and negotiation on the page between the self and the world: the conscious actions of reading the landscape and seeking out potential interpretations of its features - perceiving and then imagining, reconstructing, building a new and different world (or version of the world) - take this fusion of self and world and make it, through fiction, a representation of something beyond the personal. The external landscape, read this way, is reformed into a new, imagined landscape: an internal landscape. It is constructed of all the readings I take of Wylfa/Wylfa B, and blended with my existing experiential knowledge of the landscape of Wales more widely – the rivers I swim in, my experiences of delivering lambs, the conversations I have with

friends and family regarding the Wylfa B project. It provides a testing ground for imagining places and dramatic situations that can then be invoked on the page. I am able to access this internal geography in my study at home, miles away from the real landscapes of Wales, using my notes and memories as triggers and resources for the writing.

The process of reading the landscape from the perspective of developing fictive personalities in parallel to my own afforded an opportunity to expand my own responses to nuclear sites outwards, imagining responses to the landscape that pushed beyond my own experience towards extremes of engagement. I could therefore create Jennifer as someone for whom working at a nuclear power station was routine and functional (see *Borderlands* Ch2, pp. 23-25), as opposed to my own experience of novelty when working there. Throughout the writing of the novel I created situations that then challenged her perceptions of that role, of the power station itself, and of the landscape in which she lived and worked, developing a journey that moved her towards the other end of the spectrum, in which her response to the same place resulted in panic attacks and anxiety due to her changed perceptions. These situations included her not only viewing Wylfa from new perspectives, as discussed above, but being confronted with issues of safety, human error and community due to the nuclear incident drill (*Borderlands* Ch. 6, pp. 78-79), the power cut (*Borderlands* Ch. 10, pp. 128-139), the research she does in response to her suspension from work and Helen's absence (*Borderlands* pp. 120, 130, 136, 167 and 226), and her new interactions with the changing landscape (*Borderlands* pp. 96, 113 and Ch. 12, pp. 145-147). Jennifer is thus forced by circumstance to view Wylfa, the site for the new power station, and her own home, in new ways and with an attention to detail and consideration of meaning that then directs her emotions and behaviour.

2.2 Chernobyl: The Spectacle

While Wylfa declares its presence through dramatic modernist design and simultaneously encourages us not to see it through camouflage, contemporary Chernobyl similarly asks us to look and directs our gaze. This (mis)direction has been occurring in numerous ways since the event itself and the Soviet authority's initial attempts to control information and understanding of the situation (c.f. Alexievich, 2006, Kuchinskaya, 2007, and Plokhy, 2018). In terms of my research for *Borderlands*, examining the ways in which I have engaged with the landscape of Chernobyl from a distance, and therefore how it is presented to the West, felt vital to my process. By far the easiest and safest way to research the landscape of Chernobyl is by drawing on resources available digitally. However, I wanted to understand how these resources might be directing my response to Chernobyl's landscapes, in the same way I had studied Wylfa's design and discovered how the visual messages of a particular place direct emotions and behaviours.

My first view of Chernobyl was news footage of the gaping maw of Reactor Four on a small black and white TV, my second view of it was online, perhaps fifteen years later. When I first started writing about Chernobyl for my MA dissertation, the internet provided me with the chance to find information quickly. I engaged in an online exploration of the Exclusion Zone, seeking out depictions of Chernobyl that might give me a view of a landscape restricted to me by distance, toxicity and regulation. Early websites, such as Elena Filatova's online Blog 'Ghost Town and the Land of Wolves'⁷ (Filatova, 2003-2005), showed images of a world destroyed by

⁷ This website was one of the first to show photographs taken by a lay visitor, and purportedly showed pictures of the Exclusion Zone taken while Filatova explored the Zone on her motorbike, coupled with ethnographic, scientific and political opinion. It was criticised as, but not proven to be, a hoax, and Filatova continues to maintain the site with updated photographs and personal commentary on Chernobyl and the Exclusion Zone.

humans, bereft of human life, and of houses and cities reclaimed by wildlife, albeit often stunted and radiologically affected wildlife. Artists such as Robert Polidori (2003) and Andrej Krementschouk (2011) began documenting the abandoned town of Pripyat and outlying villages, sharing their work online and in print, providing a high definition view of the evacuated city of Pripyat and the crumbling villages surrounding it.

Many of the early photographs of Chernobyl, both those by artists and those by unofficial visitors and journalists, seem lacking in drama at first glance – an overgrown road, a weather-beaten house, a block of flats. However, as the Slavonic literary and cultural studies professor Andrea Zink states, a combination of cultural awareness of the subject of the photographs, and the defamiliarization of objects that are commonplace in other settings and so usually automatically perceived, leads to delayed perception of the details within each picture that demands the viewer question what it is they are seeing, or not seeing, to find meaning in the images (Zink, 2012: 106). For example, to look at Polidori's photographs from *Zones of Exclusion: Pripjat and Chernobyl* (Polidori, 2003), that which at first glance appears to be a photograph of a residential street, on closer inspection shows saplings growing through the tarmac, missing window panes, and an absence of people. This means that the 'otherness' of the space, the emptiness of it, becomes the focus and the instigator of emotional response (see figure 6, p. 93 below for a photograph taken by myself that illustrates this). Zink (2012: 106) posits that 'the spatially static nature of photography is particularly appropriate for capturing the contaminated radioactive zone around Chernobyl as it rots away over time,' so that photography takes on the primary role of documenting the landscape. Central to this is absence, highlighted by signs of past human lives in a space now uninhabited. Focussing on the documentary nature of the

early images of the Exclusion Zone taken by Polidori (2003), Zink goes on to state that regarding:

the photographic representation of the Chernobyl region, arranged and stylized images are superfluous [...]. The catastrophe itself has already stylized the landscape, turning it into a stage. What counts now is rather to capture this “spectacle of reality” (Zink, 2012: 106)

Over time, however, the ‘spectacle of reality’ concerning Chernobyl has evolved into a multimedia industry, and the ‘reality’ of the landscape has been transmediated into entertainment in the form of games, films, television dramas and tourism. Since the collapse of the Soviet Union, and the increasing glasnost (openness) initiated by Gorbachev just before the event, much of the initial secrecy surrounding Chernobyl has been reduced. While the event was initially unreported to the global community until high radiation levels were detected in Sweden, forcing an admission of the accident, there are now not only opportunities for academic and scientific research, and an international commitment to decommissioning and safety at the site (EBRD, 2017), but a growing tourism and media industry developing around the site as an area of cultural, as well as scientific and political, interest (Yankovska & Hannam, 2013, Goatcher & Brunsden, 2011, and Rush-Cooper, 2013 and 2014). Illegal tourism became increasingly common in the Exclusion Zone through the 2000s, and in 2011 the Ukrainian government sanctioned official tours, leading to an increase in visitors from a few hundred per year to approximately 50,000 in 2017 (Nault, 2018) and the commodification of the Exclusion Zone as a site of Dark Tourism, as explained by Philip Stone, Executive Director of The Institute for Dark Tourism Research (iDTR) (Stone and Sharply, 2009: 59 and Stone, 2013: 1). The commercial tours have vastly increased the number of images online, with some websites providing a communal space where people can upload and share repeated images of the area, declaring that

Chernobyl is ‘the most fascinating place on Earth. Framed by you!’ (ChernobylPhoto, 2018).

This commodification and distanced/tourist observation of Chernobyl has been enabled by the digital age: it is possible to interact with and explore the landscape without even taking a tour, but rather via the mediation of technology. There are now digital archives such as the Chernobyl VR Project (The Farm 51, 2018), and websites offering ‘a virtual tour of Pripyat in pictures from the safety of your screen’ (ChernobylGallery, 2018). Coupled with video games such as *STALKER: Shadow of Chernobyl*⁸ (Bolshakov, 2007) and the forthcoming game *Chernobylite* (The Farm 51, 2019), there are multiple opportunities for immersive digital interactions with the landscape of the Exclusion Zone that are designed to generate feelings of fear and unease, and present the site as a place and event to be consumed, albeit safely, for entertainment.

Considering how the contemporary Exclusion Zone has become marketised and presented, I see it as a micro-version of what Guy Debord calls ‘The Spectacle’: a consumerist relationship with the world around us, whereby ‘the spectacle produces spectators, and thus protects itself from questioning, [...] induces passivity rather than action, contemplation rather than thinking’ (Greil, 2004: 8). In *The Society of the Spectacle* (Debord, 1994), Guy Debord describes ‘The Spectacle’ as a western phenomenon in which representation takes precedence over authentic social life. The abundance of digital representations of Chernobyl, which include film and

⁸ Developed by a Ukrainian Games company, *STALKER* is based loosely on the novel *Roadside Picnic* by the Russian Sci-fi authors Arkady and Boris Strugatsky, and the subsequent film adaptation *Stalker*, directed by Andrei Tarkovsky. All three works draw heavily on the use of Zones as spaces of exclusion, unnatural ecological and biological mutation, and existential danger. The game uses geographically accurate representations of Chernobyl’s Exclusion Zone as the landscape in which the fictional gameplay is experienced.

documentary,⁹ all contribute towards Chernobyl as spectacle to those not living and/or working there and experiencing the emplaced social life of the landscape. Commodified thus, there has developed a new semantic meaning of the word ‘Chernobyl’, in which the place and the disaster are now intrinsically linked (Marder, 2016: 42, and Goatcher & Brunsden, 2011: 116), and which encourages a distanced and potentially passive engagement with both, predominantly focussed on viewing rather than interacting.

Debord declares that ‘the spectacle has its roots in the fertile field of the economy, and it is the produce of this field which must in the end come to dominate the spectacular market’ (Debord, 1994: 4). Considering this declaration, Chernobyl can be seen as the perfect example of how an event experienced by and still affecting thousands of citizens can be commercialised and turned into a product for consumption, with imagery of its landscape its bestseller. While ‘the spectacle [itself] is not a collection of images,’ Debord writes, ‘it is a social relation among people, mediated by images’ (1994: 5), whereby a specific world view is accepted and actualised within society, perpetuating a passive acceptance of the messages encoded in the images (Debord, 1994: 5). The most recent example of this can be seen in the 2018 rebranding effort within the city of Pripyat. ARTEFACT (2018), an arts project presented only to journalists for one night, aimed to show the world media that the Exclusion Zone is safe and open to visitors and to challenge fake-news about the site’s continued dangers, while simultaneously issuing thin (un)protective HAZMAT suits and Geiger counters to the guests. The contradictory messages intrinsic in this project are further exposed by the fact that the installation is only accessible to the general

⁹ Some examples include *The Babushkas of Chernobyl* (2017) , the controversial *The Battle of Chernobyl* (2006) and the horror film *Chernobyl Diaries* (2012).

public online (ARTEFACT, 2018), perpetuating the mediation of the landscape via technology and distance, and further contributing to the spectacle of Chernobyl and narrative of anxiety and danger.

When researching for my writing, both for my MA and in the early stages of my Doctoral research, I was particularly drawn to photography of the site that seemed to offer a realist view of the Exclusion Zone. I sought out imagery depicting the evacuated spaces, the personal items left behind, and the way vegetation had begun to reclaim previously industrial, residential and agricultural areas. I know now that focussing my attention on such details is common. The human eye is drawn to:

iconic depictions that signal threats to human welfare, especially when they extend to self, and that show others' acute suffering of harm and the grievous aftermath of destructive happenings (Zillman et al, 2001: 307).

These images caused me to question my personal relationship with both local and global landscapes, and cemented my decision to write a realist novel that would allow me to explore these questions within existing political and social frameworks. Taking a metacognitive approach to how they were informing my perception of nuclear landscapes and my writing about them I considered a number of questions: What specific emotions did the images trigger? What narratives emerged from these pictures? What language(s) could express what I was seeing?

The more I viewed the images, though, the less I responded emotionally – there were recurring motifs, the same locations depicted from multiple angles. While the images transfixed me, they also anaesthetised me – after recurrent exposure the subject of the photographs began to seem less real as ‘the shock of photographed atrocities wears off with repeated viewings’ (Sontag, 1979: 20). New emotions, different emotions, felt beyond my reach. The repetitive content of Exclusion Zone images

(alongside the socio-political-cultural contexts in which they are taken and viewed) can be seen to teach viewers ‘what they need to know in order to arrive, by their own reasoning, at some conclusions about what they are looking at’ (Goatcher and Brunsden, 2011: 125). However, the canon of images of Chernobyl, like those of war photography¹⁰, ‘are themselves a species of rhetoric,’ as Sontag (2003: 8) points out. ‘They reiterate. They simplify. They agitate. They create the illusion of consensus’ (Sontag, 2003: 8). In other words, ‘the photograph is a process of normalizing and simplifying the Other’s suffering’ (Stawkowski, 2016: 152), which creates ‘a moral complicity that destabilizes public discussion, making clarification and eventual resolution ever more unattainable’ (Biehl, Good, and Kleinman, 2007: 5). From a distance, this rhetoric also sustains the feeling that this landscape is in its entirety dangerous and threatening (the predominant narrative in video games and films), which to an extent erases the complex lived experiences of the residents and workers in the Exclusion Zone. It often seems to exclude the reality of the Exclusion Zone as a place in which multiple and varied emotional and behavioural engagements with the landscape and its radiological properties, not just those involving direct threat or fear, take place. The distance, and exclusion of the complexities of real life, that photography can create was something I wanted Helen to become aware of during her trip. Like the other tourists she is compelled to record what she is seeing, but becomes disillusioned with the photograph’s inability to capture what she is experiencing and what she is learning about the place and event itself (see *Borderlands* pp. 80 and 84).

Studying the content of the photographs themselves also revealed to me a mythologizing of the space, with the repetition of certain motifs contributing to the

¹⁰ Comparisons between experiences of the Chernobyl disasters and experiences of war are frequently made, see Alexievich, 2006, Zink, 2012 and Plokhly, 2018.

implication that there is a single story of the landscape, and that simultaneously this story is perhaps exaggerated or based in false beliefs. In part the myths arising from the photographs are fomented in images that, instead of capturing the spectacle of reality like Polidori's artworks, artificially juxtapose domestic and industrial/military subjects to generate strong emotional responses. Even in the early years after the disaster journalists and photographers were noted to be creating the very arranged and stylized imagery that Zink (2012: 106) states is unnecessary. A worker in the immediate aftermath of the disaster recalls how:

newspaper crews came to us, took photos. They'd have these invented scenes: they'd want to photograph the window of an abandoned house, and they'd put a violin in front of it [and] call it "Chernobyl Symphony" (Latun, in Alexievich, 2006: 192)

One of the most common recurring juxtapositions is that of gasmasks and dolls or school books, which, within the context of the disaster, encourages the viewer to connect the gasmasks to the disaster, even though they are not related (see figures 7 and 8, p. 94 below for examples). The gasmasks were never intended for use in a nuclear accident, only for a gas/chemical attack from the US, as part of the ongoing Cold War. The masks were strewn across the floor or positioned next to toys and school books not because they'd been dropped in the rush to evacuate¹¹, but because they'd later been spread around by visitors. The arrangement of gasmasks and other artefacts for the purpose of getting good photographs is a recurring issue within certain parts of the Exclusion Zone. I witnessed this myself in Pripyat, and the practice has been highlighted by professional photographers as problematic regarding the

¹¹ The evacuation was not only delayed for days but was, considering the scale and danger, remarkably organised due to the layout of Pripyat in modular sections and the promise of return within a few days (Cheney, 2006).

representation of the disaster. The photographer Gerd Ludwig describes his own experience of this phenomena when photographing the Exclusion Zone:

Seeing the attraction of the gas masks in Middle School Number 3, tour organizers hooked up a few gas masks to hang from the ceiling for easier snapshots. [...] Staged arrangements do not simplify our understanding of the chaos, but rather add a further level of confusion. Outside interference and work by amateur photographers can lead professional photojournalists reporting on the Exclusion Zone to see these settings as authentic, and their photographs can then be published and unwittingly presented as true (Ludwig, 2019)

Wanting to learn more about how the composition of photographs affected responses to them, I turned to critic Graham Clarke's book *The Photograph* (1997). Clarke insists 'we *read* a photograph, not as an image but as a *text*' (Clarke, 1997: 27, emphasis in original), and that the photographic text has its own complex language of codes and potential meanings. Situated outside of the landscape Chernobyl, I recognised that I was seeking out ways of reading it through the photography, relying on a series of codes and messages to generate meaning. Clarke's analysis of Barthes (1984) helped me realise I was looking for clues in the image itself – the *denotative*, the literal meaning of any element inside the image (a toy and/or gasmask, for example) – while also relying on other contexts to decode these visual markers and discover their *connotative* meanings (Clarke, 1997: 27-39). The decoding of an image that is contextually linked to Chernobyl, with denotative elements that can be seen as literal representations of experience, was potentially leading me to a misdirected understanding of the place itself.

Utilising these resources alone as research for my writing, I felt, would be to accept a mediated representation of the place. My understanding of this mediation has evolved from an avid consumption of the images, from which I made imaginative connections

and built stories centred on the emotional responses evoked by the images, to an increased awareness that the mediation has a purpose of its own (commercial, narrative, political, for example), and that my understanding was directed by the gaze and intentions of the photographer, giving only composed and edited views of the site.

As Sontag states:

Nobody takes the same picture of the same thing, the supposition that cameras furnish an impersonal, objective image yields to the fact that photographs are evidence not only of what's there but of what an individual sees, not just a record but an evaluation of the world (Sontag, 1979: 88).

I realised that I was not seeing the landscape, I was merely seeing someone else's evaluation of it. Viewing imagery of the landscapes of the Exclusion Zone on websites led me towards a way of reading Chernobyl visually and abstractly, in mosaic form – a photo here, a screen shot there - from the comfort of my own home, via a screen, safely. As Sontag points out, the often arbitrary nature of photographic evidence shows reality is fundamentally unclassifiable, and 'is summed up in an array of casual fragments – an endlessly alluring, poignantly reductive way of dealing with the world' (Sontag 1979: 80). Therefore, while the internet provides interconnectedness which opens up opportunities for writers to find information as a resource for writing and support each other throughout the process (Harper, 2014: 24-30), it also provides 'seemingly real entities that are not real,' but rather the product of the web's 'ability to replicate in unreality, and with considerable veracity, the features of our reality' (Harper, 2014: 24). Knowledge, therefore, can be assembled from discrete (and distanced) parts, rather than through a flow of physical experience (Harper, 2014: 24), which while beneficial to some writing projects, is in direct opposition to the practice and purpose of psychogeography, and the approach I had chosen for my research.

While my psychogeographic methodology was centred on generating knowledge for the novel via the flow of physical experience, I did not want to ignore the responses to digital representations of Chernobyl I had noted during my research. Nor did I want to disregard the influence that the spectacle of Chernobyl can have on perceptions of nuclearity as a significant factor in the development of the characters in my writing. The issue then arose of how I could address the spectacle of Chernobyl in the novel in a way that acknowledges the commodification and (re)presentation in imagery of the landscapes, and also explores the ways contexts influence the reading of such images. I considered whether the act of combining context and image while browsing the web for photographs of Chernobyl could ever achieve the psychogeographic imperative to jolt the ‘pedestrian’ into a new awareness of the landscape (Hart, 2004), or whether the abundance of (and familiarity with) this imagery might reduce the experience(s) to a habitual response, contemplative rather than active, and perpetuate existing anxieties rather than realise a new emotional response to the space.

The response in the individual can be affected by when and how the viewing takes place. For the person viewing the images for the first time, they can create a strong emotional reaction that might challenge their perceptions of nuclearity and landscape; for the person viewing them regularly, they can become a habitual trigger for a static anxiety, reducing the spaces depicted to a mediated, homogenous and self-perpetuating illusion that denies new emotional responses. This realisation informed my creative decisions and macro/micro choices regarding the depiction of photography within the text.

I decided to use images of Chernobyl and Wylfa as another tool for defamiliarizing Jennifer’s response to her surrounding landscape. While Helen was

familiar with imagery of the Exclusion Zone and had internalised the resulting anxiety to the point of it fuelling her survivalist actions and directing her parenting choices for Jack, Jennifer could be someone who, while aware of the disaster peripherally, has never sought out information or imagery herself. I embedded descriptions of photographs into the narrative itself, exploring three specific outcomes: Jennifer's emotional response to the 'photographs' themselves (reading the image), Jennifer's emotional response to the landscapes in which the images are taken/viewed (contexts), and a gradual change of perception in Jennifer over the course of the novel through the multiple interactions with the images she views (amongst other catalysts for change). Jennifer experiences the heightened awareness of place and emotional response that psychogeographic practice produces (even though she herself is not consciously practicing psychogeography), and is exposed to the photographs' ability/fallibility as sources of truth regarding nuclearity (*Borderlands* pp. 120, 130, 136, and 163).

I also used photographs in the novel as a source of connection between the two landscapes and the two sisters. By viewing images either taken by Helen on her trip, or accessed on Helen's computer, Jennifer is provided with a view of both spaces that is mediated by Helen's viewpoint, and reveals something of Helen's concerns, anxieties and experience of landscape. This jolts Jennifer into a new awareness of her surroundings, and the risks of nuclearity as presented through the images of Chernobyl (*Borderlands* pp. 120, 130, 135, 162, 163). I used simple linguistic descriptions to show the denotative content of the photographs, which can also correspond to the landscape in which the image is being viewed. This was a deliberate choice made to generate a sense of unease in Jennifer at both the real space and the image space, and to breach the boundaries of both locations by highlighting similarities and differences.

Many of the objects described could be found in a UK rural/domestic setting: nuclearity is added by context, as is the meaning for the characters. Every image I depict is a description of real photographs I took while in the Exclusion Zone.

In terms of my own position between the image and the words, I found myself reading and speculating on what the details in the photographs might mean to the characters, and what they could represent in terms of their situations. For me, while constructing the story, the doll (*Borderlands* p. 114 and figure 17, p. 100 below) became symbolic of both Jack's lack of interest in toys, and the vulnerability of him as a child. The withered leaves (*Borderlands* p. 114 and figure 17, p. 100 below) were a marker of rurality (Chernobyl or Wales) and either autumn/winter or toxic destruction. The dusty concrete floor (*Borderlands* p. 114 and figure 21, p. 104 below) was a direct comparison to Helen's cleanly swept concrete floor in the room below, gasmasks (*Borderlands* p. 114 and figures 7 and 8, p. 94 below) a sign of preparing for danger, school books like the books beside Jack's bed (*Borderlands* pp. 43 and 114 and figures 15, p. 99 and 22, p. 104 below). In each case the photographs helped me to generate ideas for Helen's living space and her and Jack's characters, and to find and create connections between the two landscapes via the content of images.

While these connections served first and foremost as tools for me, the writer, to construct the characters and story and make connections between the two places, I aimed to present the details in the text in such a way that the reader can 'share the game of imagination' (Iser, 1978: 108). Wolfgang Iser's analysis of the phenomenology of reading states that 'the reader's enjoyment begins when he himself becomes productive, i.e., when the text allows him to bring his own faculties into play' (Iser, 1978: 108). On a macro level, the reader can bring their own experience of nuclearity to the reading of the photos, and /or recognise the nuclearity by the contexts

the images are presented within - a novel about nuclearity itself. Therefore, the photographs not only expose the anxiety Helen has lived with regarding the legacy of the Chernobyl disaster to Jennifer, but might encourage the reader to consider their own domestic spaces in comparison to the ones depicted. On a micro level the photographs in the novel are stripped to fragments and words representing their denotative markers, relying on the macro contexts in the passages in which they appear to direct how the character responds, and by extension, how the reader might consider them. These visual pictures are transmediated through me into language that gives simple semiotic guidelines for the reader, from which they can generate their own mind image and subsequent meaning. In this way I utilise the spectacle of Chernobyl as a way of disrupting habituated perceptions of landscape, rather than disregarding its role in wider cultural narratives of nuclear power.

2.3 Chernobyl: The Dérive

In May 2016, just over thirty years after the disaster at the Chernobyl power station, I packed a rucksack, donned a pair of sturdy boots, and journeyed to the Exclusion Zone. In terms of facing my personal demons regarding nuclearity this was the ultimate challenge. My anxieties regarding the radioactive landscape of Chernobyl, and particularly those focussed on the crumbling concrete sarcophagus built in haste to contain the emissions radiating from the melted reactor, had been imprinted on me at an early age, and restoked by my research. After careful consideration I chose to avoid the commercial tours and sourced a private guide who could facilitate access and ensure I was safe while exploring the landscape. Preparations for the trip served to heighten my anxiety further – I had never travelled to London alone before, let alone

another country. Ukraine was (and continues to be) engaged in political unrest, with the 2014 Euromaidan revolution still resonating in the capital. The paperwork required to enter the Exclusion Zone was complex and time consuming, more so because this was a funded research trip which added layers of bureaucracy to the process, including a fourteen-page risk assessment and complex insurance procedures. Reassuring the University Compliance Team that I was travelling to a 'safe' area of Ukraine, and then revealing this was Chernobyl, lent a comical horror to the process. Setting off for London, my hands were shaking as I bought the train tickets. I had \$900 strapped to my stomach to pay a man I'd never met before to take me, alone, into one of the most radioactively contaminated sites in the world.

Yet my conviction was clear: to write a realist novel that explores, in depth, emotional and behavioural responses to specific places within a landscape, I felt I must visit it. Having spent time studying Wylfa/Wylfa B directly, and recognising the benefits of capturing the data directly, through psychogeographic practice within the landscapes, it was important to me to give the same attention to Chernobyl. My distanced examination of the Exclusion Zone was analytical in nature, lacking in the 'sensual moment-to-moment experience' that Butler suggests is the key to ordering emotional responses into a text that 'a reader in turn encounters as if it were experience itself' (Butler, 2005: 12). I was concerned my depictions of the Exclusion Zone would be lacking in the kind of 'authentic' detail Overall suggests can be generated from walking through, experiencing and observing a space directly (Overall, 2015:15). More importantly, I was concerned that my research of Chernobyl's landscapes to that point was primarily occularcentric, mosaic in form, and I knew that the specific details I wanted to explore in my writing – feelings, sensory responses, and meaning generated through psychogeographic practice - were lost between the cracks, and

could only be discovered through direct engagement. My anxiety that I would somehow misrepresent or omit knowledge and details that could imbue the writing with a vivid, visceral honesty regarding character responses to nuclear landscapes, was greater than my anxiety regarding visiting the Exclusion Zone.

I was aware that the nature of the trip, limited to just a few days, meant that knowledge generated there would be subjective and subject to time and location restraints. However, my practice in Wales meant that I recognised the value in even limited psychogeographic studies. I wanted to experience a multi-modal reading of this nuclear landscape, in which all senses were involved in response, and specifically in which my feelings and perceptions of the landscape's nuclearity directly would become a source of precise knowledge for writing about characters similarly located.

Recognising my knowledge of Chernobyl up to that point was a synthesis of research but not 'the thing itself' (Bergson, 1998: 29), I sought what Henri Bergson describes as an intuitive response to the landscape (Bergson, 1998). Bergson states that there are:

two profoundly different ways of knowing a thing. The first implies that we move around the object. The second that we enter into it (Bergson, 1998: 1).

Intuition, according to Bergson, is the antithesis of an analytical approach in which the object in question is perpetually divided into symbols, and from which only a spectre of the original can be evoked (Bergson, 1998: 6-9). In order to grasp and experience that which is unique and ineffable within an object he argues one must feel sympathy with it, and gives the following example in explanation of this process:

were all the photographs of a town, taken from all possible points of view, to go on indefinitely completing one another, they would never be equivalent to the solid town in which we walk about. [...] A representation

taken from a certain point of view, a translation made with certain symbols, will always remain imperfect in comparison with the object (Bergson, 1998: 5).

While I was acutely aware that my resulting novel would itself be a representation from a certain point of view, in terms of my creative process I wanted the actions of writing to be informed through direct intuition, and not secondary representation. The connections between Bergson's explanation of intuition, psychogeographic practice, and Merleau-Ponty's theories on embodied perception are clear to me: to understand the place, even subjectively, I must be inside it, reading it as Macfarlane (2016: 74) suggests, with my whole body. My cognition and knowledge could then arise from letting go of a distanced, analytical approach and opening up to whatever interactions, feelings and knowledge might be formed through psychogeographic engagement of all of my senses.

Unlike my psychogeographic practice in Wales, where I was reconsidering habitual embodied experience of the landscape and finding new ways of looking at the space from a position as part of the of the 'closely woven fabric' (Merleau-Ponty, 2002: 249) that is the real, in Chernobyl I would be entering a space I had become habituated to only visually, via mediation and distance. I wondered how my prior knowledge would shape my experience of the Zone, and what new knowledge I would gain. Bergson's theories of *la durée* (duration) unite past knowledge and present experience through what he calls the 'multiplicity of states of consciousness' (Bergson, 2004:117), whereby instead of things (sounds and sights, for example) being experienced as a series of successive elements, rather 'their totality may be compared to a living being whose parts, although distinct, permeate one another just because they are so closely related' (Bergson, 2004: 130). Therefore, my experience of the Exclusion Zone and the knowledge I would gain would be intrinsically interpenetrated

by all past knowledge and experience, and distinct elements could only be recognised and isolated via abstract thought (Gillies, 2014: 16-19).

This multiplicity of states of consciousness is especially important regarding the nature of visits to the Exclusion Zone, which are only ever conducted in accordance with prior knowledge of the disaster and the awareness of radiological risk¹², and which are frequently performed with the express purpose of gaining knowledge, visual artefacts or information (Yankovska & Hannam, 2013, Goatcher & Brunsden, 2011, and Rush-Cooper, 2013 and 2014). My intention was that by feeling what the writer Elizabeth George calls ‘the total place experience’ myself, I could recreate this in the text for the reader to experience, so that the landscape reflects in the novel ‘not only the setting but also the emotions that are evoked by the setting,’ (George, 2004: 34-35). George believes the ability to generate a strong sense of place in relation to characters originates in an attention to physical detail by the author. However, I believe that paying attention to both personal emotional responses to place, and imagined character responses is as important. During this stage of writing the character of Helen was only vaguely formed, and therefore was being constructed as part of my experience, and I knew that some of my own experiences would be translated into hers, or imaginatively adapted to form parts of the narrative.

The drive from Kiev to the first checkpoint on the edge of the Exclusion Zone is around ninety minutes, during which the urban and suburban give way to the rural, and time seems to reel backwards. Cars and neon shop signs are replaced with horse-drawn

¹² The process of gaining access to the Exclusion Zone includes applying for a permit to visit which highlight the historical events of the site as well as current safety rules of entry and travel. This is not true of all Dark Tourism sites. As Stone (2018: 228) points out, sites of historic battles or killing fields are often marketed to/visited by those seeking out nature and the rural idyll rather than those wishing to traumascape, and so prior knowledge of their ‘dark’ credentials is not always present in the tourist.

carts and roadside stalls. During this time, I was safely strapped into a car, observing the changes, wondering how to explore this sense of otherness in the novel. I had time to anticipate what it would be like to cross the border into the Exclusion Zone. The expectation was that something transformative would happen during the trip, an epiphany perhaps, regarding my understanding of the relationship between myself and Chernobyl, or at the very least a powerful emotional and physical response. After all, I was journeying to the place that had, for my whole life, frightened me. Arriving at the first checkpoint I was told to stow my camera so it wasn't confiscated, made to wait in the car while my guide took my passport and went through the permits and paperwork with the armed uniformed guards. I was struck by the ritual of the situation, and my experience of it in comparison with that of the guide and the guards. I was still behind a glass screen, observing while they smoked and chatted, while a dog lolled, tongue loose, beside their barracks. My sense of anticipation was challenged by their complacency, and confirmed my suspicion that this landscape, no matter how imbued with political, geographic and historical significance, could be or become normalised to those who interacted with it daily, who had a lived experience of it. I also felt excluded, vulnerable, and lacking agency. My interactions with the landscape at this point were under the control of the officials, and what felt like a military procedure. At one point an armed guard in army fatigues stared at me through the car window, checking my appearance against the image on my passport. I made notes about these feelings, shifting under the constraints of the seatbelt.

It [the landscape] all looks and feels the same as it did on the outside, and I'm still just looking...I'm more nervous of the guards than of the radiation – didn't expect this!...I feel disappointed that my reaction isn't stronger, why aren't I nervous?

We drove on, heading towards Ilovniza, one of the abandoned villages I had seen online as part of the spectacle of Chernobyl. Debord's biographer, Andrew Hussey, sees Debord's attack on 'The Spectacle' (both the promises made by Communism and the rise of Capitalism) as prescient of the fall of the Soviet Union, and relevant to contemporary Western cultural attitudes. He states that Debord declared the first step towards rejecting the illusion of 'The Spectacle' 'was "the construction of situations", moments of poetic intensity when "real life" could be glimpsed' (Hussey, 2001:4). More recently, at a Psychogeography Symposium I attended (Edge Hill University, 2016), the psychogeographer and dramatist Phil Smith declared the internet age a new Capitalism, in which 'The Spectacle' can appropriate anything, and where the *dérive*, or drift, could reclaim, through hyper-sensitised walking, that which the capitalist mind cannot detect (Smith, 2016). Stepping out of the car for the first time in Ilovniza provided me with the transformative moment I had been anticipating. This situation, this contact with irradiated soil, though not direct (I had on my sturdy boots of course), felt, beyond any of the anxiety propagated by the photographic representations I was familiar with, seismic. The safety provided by my computer screen, and the car windows, was stripped away. While I have practiced mindful walking in the past, this was hyper-sensitised to another level. By creating the situation – being inside the Exclusion Zone – I was able to access a wealth of emotional and behavioural responses to the real-life experience of being in an irradiated landscape. The real here being my own subjective response, experienced directly and not through any mediation via the spectacle of Chernobyl.

Debord states that 'the spatial field of a *dérive* may be precisely delimited or vague, depending on whether the goal is to study a terrain, or to emotionally disorient oneself,' however these positions frequently overlap (Debord, 1958: 64), and as such

provide varied data for creative response. I hoped to achieve both goals: to gather subjectively authentic, detailed data related to specific landscapes in order to portray a realist experience of Ukraine and the Exclusion Zone, and to open myself up to a looser methodology reliant on serendipity: catching sight of a wolf; a conversation providing specific knowledge I could not have known to seek out; or the feeling/emotion of being within a specific space. Certainly, I felt emotionally disorientated already, and alert to my guide's instructions and advice. While the practice of a *dérive* might involve imposing rules (such as only turning left) to force a drift through unexpected, disparate ambiances, my movements through the ambiances of the Exclusion Zone (the active city of Chernobyl, the abandoned town of Pripyat, the forest, for example) were directed by an itinerary set by the officials processing my paperwork, and by the radiation itself. The nuclearity of the area, therefore, coupled with the need to document the trip as source data for my writing, intersected and informed the *dérive*. I was aware of every step, every source of contact with the environment around me: the breeze, each inhalation, water dripping from the trees, a falling leaf. All were suddenly potentially harmful, in a way landscapes with similar topography and features have never been. I was told not to touch anything, not to kneel to get a better angle for a photograph, and even walking became a hopscotch of avoiding the more highly radioactive areas such as the moss pillowing out between cracks in the tarmac. I could not reach out and experience the textures of the stone, soil, fallen leaves or abandoned toys with my fingers, I could only look.

While this might seem to negate the whole point of visiting, it is important to recognise that even though I could not touch certain parts of the Exclusion Zone, the experience was still immersive and multi-modal, just in a way that was informed by the radioactive risk. Knowledge of the Exclusion Zone's potential toxicity is not based

on seeing, hearing or smelling anything, as you would the black clouds from a coal-powered power station, or the chemical smell from a dye factory. Instead personal risk-assessment is based on shared cultural knowledge, knowledge of nuclearity, and the instruction of the guides and their mediating equipment. The tours rely on reassuring visitors they are safe while simultaneously demanding they sign a document relieving them of any responsibility for illness following the visit. Part of the experience of the tours is this awareness of potential harm, and the constant negotiation of risk, excitement, remembrance, knowledge production by being inside the space, and preservation of lived experience that both tour guides and tourists undertake (Yankovska & Hannam, 2014, Goatcher and Brunsden, 2011, Rush-Cooper, 2013).

The phenomenologist, philosopher and writer, Alphonso Lingis, building on Merleau-Ponty's theories of embodiment and perception, describes 'environment as an imperative' (Lingis, 1998: 68). In this way landscape is never neutral, but an authority, demanding we read it physically through the senses. Perception of landscape cannot be reduced to a singular process, rather, aspects of each specific landscape demand multiple bodily responses:

To feel the tangible, the smooth, the sticky or the bristly, our touching hands has to move across a substance with a certain pressure [...]. We do not see the dull moss-green of the leaves with the same movement of the look that makes the ardent red of the rose visible (Lingis, 1998: 57).

Even looking, when unmediated and undertaken within the spatiality of a landscape rather than via media representations, is a physical response to the demands of the environment (Fullegar, 2001: 175-177) and is intertwined with other sensory responses such as sound and light which draw our gaze. Lingis's assertion that physical imperatives and bodily engagement are inherent in perception of landscape

is, however, more complex when applied to the Exclusion Zone as the nuclearity of the landscape generates a bodily response despite being undetectable by the body. It is not only the rules of the tour and shared cultural knowledge that demand certain behaviours, but a personal, intimate awareness of the potential risk of the environment to the self. The imperative of the Exclusion Zone's landscape is to restrict physical interaction and maintain a constant awareness of the self in relation to the landscape. Radiation is not a risk the self can easily assess and negotiate, as one would a steep shale hillside or the size of waves on the beach, but a risk that cannot directly be perceived and can only be acknowledged conceptually and thus relies on belief in:

fundamentally invisible causal connections between conditions that are often substantively, temporally and geographically far removed from each other [...]. [T]he invisible, more than that: that which as a matter of principle cannot be perceived [...] becomes a component of personal thought, perception and experience (Beck, 1986: 96 cited in Heise, 2006: 180).

Experiencing the contradictory feelings that the situation of being within the Exclusion Zone stimulated, for example of anxiety and excitement, helped me to form Helen's own emotional response to the tours. I found myself making notes on my notes, adding questions to my observations like:

would Helen feel anxious or angry at the checkpoints?
H is a farmer – used to visceral contact with land = sense of disembodiment?
and
The broken truck = Jack. Trigger for memory or link to section in Wales?
(see figure 18, p. 101 below)

I was concerned at first that her character and narrative arc were not emerging quickly enough to me, however I knew forcing it would not help either. By asking the questions I could return to them later and test out answers on the page, where each of

her responses to specific parts of the landscape would build up and demand, as imperative, a logical response to the next based on temporal, spatial, emotional and cognitive experience as part of **her** own multiplicities of consciousness. Additionally, by questioning how **she** might read items within the landscape, connections were made to the landscape of Wales and the new development, and also to the other characters. In this way the thematic conversation between the two spaces, and how the contiguous timeline might work, began to take shape. By taking into the landscape of Chernobyl my own knowledge of Wylfa, and the early drafts containing descriptions of Helen and Jennifer's houses, I was able to find similarities between both that in comparison generated a sense of the spaces haunting one another palimpsestically. In this way, small details could be mirrored and/or distorted to unite the spaces. For example, the coats slipping from the pegs at Jennifer's house were developed to mirror the clothes left on the floors of abandoned cottages, and the toy truck Helen sees later in the zone became a recurring image throughout the novel: as the gift to Jack from Ioan; as Ioan's own old toy left on the lawn; and in the JCBs tearing up the landscape in Wales. In this sense details observed through psychogeographic practice developed into anchor points for me in the writing process that helped me to depict the spaces, characters, emotions and behaviours in the novel (*Borderlands* pp. 30, 88, 96, 113, 146, and 256, and figure 18, p. 101 below).

While I tried to resist pinning down a narrative during the trip, an idea for Helen's experience of the tours did begin to flicker, somewhere just at the edge of my peripheral vision, that would involve a dissembling of her pre-conceived ideas of the Exclusion Zone, and of her own constructed self. I wanted to show, through Helen, that which cannot be caught on camera in the Exclusion Zone, to expose some of the artifice that is perpetuated in the images available online and thus destabilise that

which had been fuelling some of her anxieties, while still allowing the experience to be cathartic where necessary. In the passage in which she faces the original sarcophagus, for example, I felt I had to give her a sense of achievement as a way of balancing the disappointment at other stages of the tour. Similarly, it acted as a catalyst for her traumatic childhood memories, and what is later revealed to be the source of her survivalist mentality, to be triggered.

2.4 Dosimeters

The lack of direct perception of radiation in the landscape makes reading the space problematic, and writing about it more so. Literary responses to the disaster written in the first few years after the event, such as those by Voznesenskaya (1987), Wolf (1989), (see also, Gubaryev, 1987 and Zybytko, 2000, sourced through Heise, 2006), and later by Alexievich (2006) and McKeon (2014), address the release of radiation from within Chernobyl's fourth reactor and its saturation of the landscape. They primarily focus on the fate of rescuers and residents directly exposed to the first expulsion of isotopes. In these texts the immediate effects of radiation, whether physical in terms of acute radiation sickness, or demanding specific physical responses to landscape such as evacuation, provide the source for tension. In my own novel, set at a time when interaction with the Exclusion Zone is one of entering by choice, rather than leaving by force, and the risks are sought out rather than avoided, exposure too is by choice: not through the imposition of accident, but facilitated by it. The disaster itself and its power as an immediate disruptive force are both temporally distant, therefore the disruption to everyday life and the expectations and assumptions that shape it are on a more interior, cognitive, level. Capturing this internal disturbance in

relation to reading and then writing the landscape and generating a ‘total place experience’ (George, 2004: 35) for the reader becomes one of showing how the individual must, due to regulation and risk perception, move through the space differently to that of normal, habitual engagement.

When Wylie (2007) discusses the inherent tensions in landscape phenomenology between proximity and distance, body and mind, sensuous immersion and detached observation, he does not, understandably, include the notion of unfelt radiological penetration. *Wormwood Forest* by Mary Mycio, an American reporter with Ukrainian parents who visited the Exclusion Zone ten years after the disaster to examine the ecological changes being studied there, was the first text I read that focussed less on the immediacy of the disaster and more on its legacy. In this autoethnographic discourse charting Mycio’s experience in the Exclusion Zone she describes the contrast between what she expected in terms of irradiated landscape and what she actually encountered. She compares her initial thoughts about it to ‘contemplating a black-hole’ where all she could picture was:

a dead zone, like a giant parking lot paved with asphalt or a barren desert of dust and ash where nothing could grow and nothing living could survive without protective gear (Mycio, 2005: 1).

In fact, what she found there were ‘feral fields, forests, and wildlife!? [*sic*]’ (Mycio, 2005: 1). Unlike the ‘tiny black holes in the leaves’ that appeared after the accident and which are described in *Voices From Chernobyl* (Alexievich, 2006: 40), ten years later the radiation was hidden inside the ‘wild plums’ and ‘normal looking pine saplings’ (Mycio, 2005: 49). In the Exclusion Zone there is an extra tension inherent in the phenomenological experience of landscape, that of the proximity and distance of isotopes in both landscape and body, of the physical and mental presence of

radiation (which fluctuates spatially), and of the complexities of sensuous immersion in a landscape that can appear abundant in life while being toxic, or appear toxic while being safe. These dualities affect the way all visitors to the landscape respond, with a turn towards technology to mediate the absence of natural sensory capabilities (Rush-Cooper, 2013).

The dosimeter, then, became intrinsic to my embodied experience of the Exclusion Zone. Dosimeters are devices used to measure exposure to ionizing radiation, alerting the individual via a digital readout and audio output in the form of clicks that increase in frequency as the dose rate increases. They not only record exposure in the moment but calculate cumulative exposure over a defined period of time. Ionizing radiation is harmful to biological life, causing cancers and reproductive problems, and therefore monitoring dose rates is a vital aspect of health and safety in any industry where exposure might exceed safe levels. While I didn't have my own dosimeter, my guide taught me how to use his and let me hold it during our drive into the Exclusion Zone. For the first day much of my attention was on the leaping numbers and chirping clicks, the alarm that sounded when the reading breached a certain dose rate, and notably the absence of sound in many areas we visited.

I felt that the dosimeter must appear in the novel, as a device through which Helen and the other tourists can mediate their experience. I knew even before I began the tour that Helen would bring her own, as my intention was to write a character who is self-reliant and acutely aware of the risks she anticipates. Like Helen, I assumed all of my interactions with the Exclusion Zone would be monitored, and movement and time mediated by the device. However, I found the way that dosimeters are used as part of the visitor experience particularly interesting, and in stark contrast to habituated use of dosimeters in nuclear power stations (see *Borderlands* p. 24). While the

dosimeter was frequently used to draw attention to specific places or items that gave a high reading (The Red Forest, the fireman's trousers in the hospital and the moss in Pripyat), or its use was encouraged while exploring to give me the experience of 'reading' the landscape as a radioactive space (see figures 29-35, pp. 111-112 below), it was also turned off or silenced regularly as the alarm frequently triggered. I was assured that the tour guides' knowledge/experience of the places we visited meant I was not exposed to dangerous levels of radiation. Visitors are not permitted to visit the highly radioactive areas of the Exclusion Zone, and Dosimeter alarms are set to go off at readings that remain below levels harmful in the short term. My total dosage of radiation on the trip was recorded and was less than I was exposed to on the return flights,¹³ revealing how fear of radiological risk is intrinsically embedded contextually regarding Chernobyl, while other sources of radiological risk, such as frequent flying, are not automatically seen as harmful.

Using the dosimeter and observing how others interacted with it led to me question the use of dosimeters on the tours, and their role in mediating the experience of the Chernobyl tourist. They are undoubtedly necessary tools for those working frequently within areas of elevated radiation, and their use is encoded in health and safety practice on sites such as Wylfa and Heysham, as well as inside the Exclusion Zone. However, their use during the tours is as much to do with the sensual, emotional experience of the landscape as it is to do with the safety regulations. There were times inside the Exclusion Zone where all I could hear were birds singing and the sigh of the wind in the trees, or rain on the asphalt. When, if I suspended my awareness of the nuclearity of the landscape, I could have been anywhere - until the guide switched the

¹³ Air travel exposes people to cosmic ionizing radiation, which is why there are national and international guidelines on exposure for air crew during a calendar year/five year cycle (Centre for Disease Control and Prevention, 2017)

dosimeter on again. When the dosimeter was on, I was alert to the information it imparted, to how it changed my response to the things I could see and smell. The crumbling, rusted hinges of a house were safe, the tiny white flowers and ripening fruit of the wild strawberries were not. The usual logic behind assessing the features of an environment as risky or benevolent (or even nutritious) was often, though certainly not always, inverted by the use of the dosimeter. My guide was frequently concerned by the risk of ticks from the long grasses, insisting I stamp my feet repeatedly before getting back into his car to shake off any creatures that might be trying to hitch a ride on my boots or trousers. In an area of little or no contamination within the Exclusion Zone these concerns took precedence over the risk of radiological contamination, as identified in my own risk assessment undertaken before the trip. At other times, when travelling past the Red Forest for example, extra precautions were taken to ensure our safety: car windows were closed, the vents shut, and my guide drove faster to ensure as little time as possible was spent in the area. The Dosimeter was switched on to alert us to the leap in numbers, to calculate total exposure and ensure we were within safe limits.

Having previously based my understanding of the tour experience on research by geographers (e.g. Rush-Cooper, 2013) and scholarly articles on tourism by sociologists (e.g. Stone, 2013, Goatcher and Brunsden, 2011, and Yankovska and Hannam, 2013), I found my experience of using the dosimeter to be valuable serendipitous knowledge, and knew that this would inform the novel regarding Helen's embodied experience. While dosimeters feature heavily in tourist photographs as a means of articulating the unphotographable, and provide a way of negotiating the seen/unseen in the embodied landscape, they also serve as a disrupter of lay experience of the same landscapes. For the visitor they are vital in contextualising and

rationalising the experience of an irradiated landscape, and in fact contribute to the experience, but for the tour guides their role is less important to self and more to shaping the experience of the person/people they are hosting. Additionally, when a tour guide removes the dosimeter from the visitors' immediate attention, the visitors are enabled to experience the liminal state of not knowing, in which temporarily forgetting the danger is as possible as feeling a heightened fear due to lack of sensory input.

I realised that the dosimeter's role in the novel, then, could become a source of tension not only when it was used, but when it was not, and in ways I had not anticipated. I knew that to describe the leap of static and rising numbers in the text would generate a sense of tension in the reader, as it signals increasing danger. However, in exposing the tension between using and not using the dosimeter, I could also show that the embodied experience of the Exclusion Zone is not one of absolute knowledge regarding risk and safety, rather, it is an experience of perceptive flux, subjective to the individual and their spatial and temporal situation moment by moment. I wanted to explore this negotiation of seeing and not seeing during Helen's tour, where the use of dosimeters as signifiers of danger within a commodified interaction with landscape could be exposed by characters who have more experience of the Exclusion Zone than her due to repeated visits. While Helen initially turns to her dosimeter to read each space and keep her safe, the characters of the American film makers are happy to trust their guide and already understand its use as tool to generate an emotional reaction in the visitor (*Borderlands* p. 60). Ally, Ben and Jake's interactions with the Exclusion Zone could be read as consumers and exploiters, but their role is far more complex. They were created, as were the German couple and the other tour groups, to show the diversity of experience and embodied responses to the

space and provide contrast to Helen's experience. Their familiarity with the Exclusion Zone was designed to act as a bridge between Helen's own nascent experience, and Sergey and Anton's routine engagement. That the experience of visiting a nuclear landscape is framed within personal contexts and changes with each visit, creating a palimpsestic layering of meaning and emotional response, is explored in the exchange between Helen and Ben in the abandoned house (*Borderlands* pp. 61-62). I decided to have Ben state that he understands how overwhelming the experience feels, to show that he too has felt overwhelmed during past visits of his own. I wrote their exchange to highlight their different positions on a continuum of temporal experience. Ben's response contains past emotional experiences and a desire to share previously developed knowledge of the Exclusion Zone and potential responses with someone for whom the space is still new. By showing he was unaware of why Helen personally finds the spaces so emotionally charged – the historical resonance regarding her memories of the disaster and the resemblance of the space to the emptied houses back home – I explored the extent to which individual encounters with the landscape are subjective and emotional and behavioural responses directed by personal multiplicities of consciousness in the moment. That the secondary characters are primarily presented through Helen's perspective does not reduce them to less valued sources of knowledge generation, but serves to highlight the subjectivity of engagement with the space.

I also wanted to take Helen outside of the tour experience and examine a different level of engagement with the landscape, and the dosimeters. The tours are tightly managed to show certain areas of interest and could be seen to provide a mediated experience that often draws on the myths of the landscape and media representations, frequently following the route of video games (Stone, 2013: 7, Rush-Cooper, 2013). My experience of being alone with my guide meant I visited areas that

are not on the most common tourist trail, and I was allowed to roam (where it was safe to do so) alone. This enabled me to get a sense of being immersed and to an extent lost, in the forest and evacuated villages, and to imagine what it would be like to navigate my way through alone, or with a guide, on foot.

Away from the routine spaces of the tours, I realised the role of the dosimeter could change for both parties. I decided to examine this via Helen's negotiation with Anton, and herself, regarding whether they should use the dosimeter to find out how safe or dangerous the landscape is. No longer on a tour route, the dosimeter's role is changed – the knowledge it can provide will not change the way Helen and Anton must interact with the landscape or their position within it. When setting out from Baba Olena's home, Helen chooses to rely on Anton's local knowledge and the task of leaving, rather than cloud her perception of the task with extra concerns (*Borderlands* p. 184). Later still, when they are further into the Exclusion Zone and negotiating the risks inherent with being in a forest at night regardless of potential radiological contamination, the question recurs (*Borderlands* pp. 191-192). What follows is a negotiation of how the reading would change their situation, or perception of it. By agreeing not to take a reading the tension between what is not-felt but possibly present as an embodied if not sensually experienced force is heightened. Rather like the cat in Schrödinger's thought experiment (Trimmer, 1980), they are both safe and in danger. Until they take the reading, they are both penetrated by radioactivity, and not penetrated by radioactivity. Either way they are still in the landscape, and 'opening the box' can only change their emotional response to the situation by revealing the truth. Not knowing, not seeing, keeps the possibility of safety open.

2.5 Documenting the Dérive 1: Tension and Resolution

One of my concerns during the psychogeographic practice was to what extent writerly documentation, especially taking photographs, might interrupt my objective of immersion in the landscape. In *The Phenomenology of Perception* Merleau-Ponty highlights the presupposition that there is a distance between the object and the viewer, stating:

In exactly the same way as the act of naming, the act of pointing out (or pointing a camera) presupposes that the object, instead of being approached, grasped and absorbed by the body, is kept at a distance [...], treated as representative of its previous appearances in me, and of its simultaneous appearances in others, in other words, subsumed under some category and promoted to the status of a concept (Merleau-Ponty, 1970: 120).

There is an immediate tension apparent here, in that I was seeking out a sympathetic, intuitive response to the space of the Exclusion Zone that required letting go of analytic thought, while at the same time my purpose for being there was to gather data for my novel, a process that demanded I distinguish and record elements of that experience. The tension between analytical thought and immersive experience is recognised, and to a certain extent resolved, by both Bergson and Merleau-Ponty.

Bergson, while arguing that to achieve an intuitive, absolute knowledge of a thing one must ‘refrain from separating [the self’s] present state from its former states’ (Bergson, 2004: 100) in order to achieve pure duration and sympathy, goes on to acknowledge that we are unwilling, as critic Mary Ann Gillies explains, fully to ‘surrender a mode of thinking in which symbolic representation replaces the living moment’ (Gillies, 2014: 21). Dynamism of thought, in which the accumulation of experiences in time are made possible through duration, and simultaneously act on our inner states to become living reality through symbolic modes of understanding

(Gillies, 2014: 20-23), therefore, is an active system of flux. Means of representation – in thoughts and words – must similarly be in a constant state of adaptation, fluctuating between intuition and modes of thinking in which symbolic representation replaces the living moment. In fact:

[w]e can intuit our own conscious processes if we stop thinking of our own self as made up of separate perceptions, memories and feelings and accept that our self is a continuous flux of interconnected processes, recognizing that “[t]here is a succession of states, each of which announces that which follows and contains that which precedes it” and that “[n]o one of them begins or ends, but all extend into each other” (Fell, 2009: 15 quoting Bergson, 1999: 25).

Merleau-Ponty’s theories of perception and subjectivity take this flux further and state that consciousness, the world, and the body are all intertwined regarding perception, and that experience of the world is rooted in bodily response – the senses experiencing situations spatially, temporally and physically. Cognition is situated within the corporality of the body and its environment, so that prior/developing knowledge and perceptions influence physical engagement with landscape in the moment, as much as the demands of the landscape itself. This heterogeneous reading of landscape then becomes an open system, a space for active negotiation and exchange between self and environment in which the self and landscape’s spatial and temporal entireties are acknowledged. As such, I needed to recognise that my thoughts and acts of documentation regarding my experience were as important a part of my response to the landscape as any other sense or emotion.

The practice of psychogeography similarly demands fluid movement along a continuum of being in the moment and experiencing the world bodily, and thinking about that which is experienced. I knew that I must embrace this dichotomy of engagement, allowing myself to tune into to the space and sensory experience,

alternating this with note taking, jotting down my emotions and observations, and considering how the character of Helen might respond to and behave in the landscape. I felt Helen's response must, like mine, be created not only from her intuitive experience of the landscape, but from the way this embodied experience triggers memories and directs her thoughts, gaze and behaviour. By allowing myself to be directed, or drifting through the landscape and letting myself experience the space, I was able to acknowledge my intuitive responses and then use them to help me depict Helen's feelings and behaviour. In her discourse on Bergson and the communication of intuition through literature, Elena Fell (2009) argues that when fictional 'events are presented in an obviously fallacious manner, exaggerating the work of analysis' (Fell, 2009: 10) it can reduce the actions and experiences of characters to mere signifiers of experience. This reduction thereby distances the reader from engaging closely with the sensual, emotive elements of immersion: the 'full and vibrant flow of reality' (Fell, 2009: 10). I chose, therefore, to describe Helen's actions and emotional responses in a mimetic, realist way that represented, as closely as possible, her embodied experience. By avoiding diegetic overttness where possible, my intention was that the readers themselves might then 'become immersed in what is happening, sharing the characters' moods and feelings as they may have taken place' (Fell, 2009: 12). Noting the emotional range I felt, where I was, for example, sometimes angry, sad, bored, elated, excited and/or tired, meant that my presentation of Helen's experience could similarly show a realist response to the tours.

Once inside the Exclusion Zone I began recording my experiences - a way of generating triggers for memory that could inform the composition of the novel – through both notetaking and photography. Whilst I intended to seek out the information I felt had been lost 'between the cracks', the urge to capture the iconic

areas/symbols of Chernobyl (such as the swimming pool and Ferris wheel in Pripyat, or the rusting radiation signs by the side of the road – see figures 43-45, pp. 120-121 below) in photographs of my own was overwhelming. The motivations behind this urge are complex. I recognised that while the transient nature of my trip made me fear data would be lost, ‘after the event has ended, the picture will still exist, conferring on the event a kind of immortality it would never otherwise have enjoyed’ (Sontag, 1979: 11). I was also aware that pausing to take pictures was a way of mediating the intensity of the experience itself. By placing the camera between myself and whatever remarkable thing I was experiencing I was able to structure the experience: to stop, focus on composition, and move on (Sontag, 1979: 10). Acknowledging my own behaviour afforded me the opportunity to question the ways in which photographing the Exclusion Zone is an expected aspect of the tours in terms of documenting the trip and providing a scaffold for narrative descriptions of the experience of being there. The acts of photographing identifiable Chernobyl artefacts such as the Ferris wheel make up a shared tourist experience that partially traps the visitor within collective considerations that enclose locations using distinctive iconography (Scarles, 2009: 468). This behaviour is rooted within ‘cultural scripts and material regulations’ (Bærenholdt et al, 2007: 71) produced by media related to the landscape visited such as brochures and websites (Scarles, 2009: 468). The best way for a researcher to understand this experience is to engage in the act of photographing iconic sights themselves, alongside the tourists, and/or as a tourist themselves (Rush-Cooper, 2013: 56-61, Scarles, 2010: 922).

Taking photographs within the landscape can serve multiple purposes for the researcher/tourist. It offers a personalisation of place, a trigger for intense memories, a record of detail, amongst other things (Scarles, 2009: 469-470), and is part of a

continued response to landscape that extends beyond the temporal and spatial boundaries of the visit itself. The photographs:

become inexhaustible invitations to subjective interpretation, [offering] enigmatic spaces through which [researchers and] tourists personalise place as they connect the materiality of experiential encounters with ideological imaginings and perform that which may not be directly seen, or even exist (Scarles, 2009: 469).

I used both the experience of taking photographs, and later the photographs themselves, as dynamic sources of inspiration in my development of the characters. The tension between reproducing the iconic imagery I had seen before the trip and feeling the need to record my own journey was something I felt worth including in the novel as part of Helen's own tour experience. It seemed logical to give her the same urge to take pictures that most tourists feel, but as her character developed I wanted to show her social discomfort, and her inability to join in with the shared practice of documentation. I decided to highlight the increased importance of aspects of the experience that could not be caught on camera, focussing on the emotional and behavioural negotiations that take place in the spaces between the mosaic images. These include considerations regarding physical dangers not related to nuclearity but simultaneously saturated with it, such as the poor state of the buildings, the flora, the risk of ticks and ants from long grass, and where to step and stand.

I also used Helen's engagement with the specific features of the Exclusion Zone to trigger emotional reflections in her, whereby her memories are re-constructed so as to incorporate echoes of past emotions and behaviours into her embodied experience. These then reveal pivotal points in the prior development of her personality. As Wambacq states, when discussing Bergson and Merleau-Ponty's theories of time and embodiment:

[m]emory [...] is not a function of representational thinking but of a bodily being-towards-the-world in which the past is not relegated to a remote area but is always interacting, in its entirety, with what we do and see here and now (Wambacq, 2011: 238-239).

Therefore, Helen's past experiences are part of her current emotional and behavioural responses. The nature of visits to dark tourism sites often involves reflection on the self and global relationships with the specific nature of the site. As Stone states:

the interaction of an individual tourist with a host destination, cultures and communities is very much determined by idiosyncratic "cultural [and personal] baggage" – that is values, experience, knowledge attitudes, and so on (Stone, 2018: 510).

More importantly, while the natural focus might seem to be on the site of tourism itself, in reality, 'you can escape from those around you, but you cannot escape yourself' (Sharpley and Stone, 2011: 2), and each individual tourist's experience is 'defined by the social fabric that surrounds them' (Stone, 2018: 510). In this way, Helen's past experiences are part of her current emotional and behavioural responses, with her memories triggered by, intersecting and informing her engagements with place. This is Helen's *durée*: the immersive merging of memory, reflection and knowledge generation are all taking place in the moment.

2.6 Documenting the Dérive 2: Textural Mapping

While the urge to take iconic photography shadowed my trip, my desire, as a writer, to capture details and a sense of the landscape beyond the 'iconic' took precedence. Many pictures were hastily taken, sometimes focussing on minutiae that were different to the images I had previously viewed online, but which drew my attention via my

personal interest in the details that made up the fabric of the place. In this way, the act of photographing the features of the landscape was an act of ‘plunging into’ it (Merleau-Ponty, 1970: 67), in that it involved not a methodical cataloguing of items or objects, but an instinctive openness to that which I was encountering and drawn into. This practice became an intrinsic part of my writing process for this novel, and I began to document the textures and colours of the landscapes – the dust, mould, mosses, damp patches and peeling paint of the buildings, and the way the buildings and industrial machinery are coloured by rusts and lichens, blending them into the natural landscape (see figures 36-42, pp. 113-119 below).

In this way I realised I was creating a textural map of the landscape into which I could immerse my characters, and to which I could refer long after the trip was over, stimulating memories and emotional responses to inform my writing. To view my own photographs is to return to the subjective, self-authored experience of place, rather than to rely on the mediated gaze of another. I knew returning to them later would ‘ignite embodied reflections that [would] extend beyond the materiality of the photograph’ (Scarles, 2009: 472) and help me to reconstruct a sense of place within the novel. In addition to photography I took detailed notes on smells, temperatures, tastes, sounds and textures, which I later matched with my photographs to stimulate sense memory as well as visual memory. Beyond this my notes document not only what was seen and sensed physically, but my own, and Helen’s imagined, emotional responses to each detail, enabling me to recapture the ‘emotional disorientation’ (Debord, 1958: 64) of the *dérive* itself.

Returning to the idea of textural mapping led to other kinds of mapping, both in the processes of writing and within the novel. The SI, after conducting a *dérive*, would often construct maps of the cities they explored. These maps were not objective

cartographical diagrams of the roads and buildings, drawn to scale for the purpose of documenting the topographical features of the spaces, but narrative maps of subjective experience that signposted emotions and experiences, joined by arrows that suggested the flow of movement (Morten *et al*, 2018: 230). Early on in the writing process I decided to organise my photographs and notes into smaller maps of specific locations, adding my own and imagined emotional responses to each space. This made it easier for me to plan my characters' emotional and behavioural journeys. I drafted experimental character sketches that tested out potential emotional responses to each space, adding to the maps and editing them throughout the writing process. Finding this an effective way of organising data and stimulating ideas, I began making collage maps of the landscape around Wylfa and Jennifer's experiences and emotional responses there. Creating these layered maps then provided the scaffolding for early drafts of the novel and the evolution of the contiguous narrative. From a writerly point of view, the construction of the final text was that of creating a final narrative map, one which shows the characters' movements through varied spaces from an embodied viewpoint within the landscape.

2.7 Returning to Wales: Landscape, Identity and Hiraeth

A condition of my funding for this research was that I lived within thirty miles of Edge Hill University, which meant leaving Wales. Leaving made me homesick, but in a specific way. The Welsh word *hiraeth* has no direct translation into English, but expresses a feeling of deep emotional attachment and longing for a place, a yearning for a home you can never return to, or that has changed as time has passed: 'to feel

hiraeth is to feel a deep incompleteness and recognize it as familiar' (Petro, 2012). That speaking the word is like releasing an aching sigh is expressive of its physical nature.

Hiraeth is visceral: physically and spiritually.

It hurts.

Although I knew I had no ancestral claim to Wales, like the American author Pamela Petro who claims a similar connection to the country, I feel that:

The hills tug on my blood and it responds with a storm surge that makes me ache - a simple sensation more urgent and less complicated than thought (Petro, 2012).

Wales was where I became an adult, made friends, fell in love, got married, forged a career, gave birth to my child. It is where I first started writing. Although I no longer reside there, Wales is intrinsic to the person I am now.

During my psychogeographic study of the landscape around Wylfa I became increasingly aware of the intense feelings of hiraeth I was experiencing not only when visiting my former homelands but when writing about them. While my attention was focussed on studying the nuclearity of the landscape and how this informed emotions and behaviours, I couldn't ignore the fact that there was an undercurrent of emotions flowing beneath my interactions with the landscape of Wales. From the moment I crossed the border something shifted within me. When not consciously studying the form of Wylfa I was drawn to the smells of farms and fields, the sheep shit and daffodils, the swell in my chest when glancing the swell of Snowdonia against the skyline on my drive home. By studying psychogeography for the novel I became aware, brutally, of my own psychogeographic responses, even when not overtly observing them.

Recognising the power in these responses, I decided to explore how my own deep longing for a specific place could be used in the novel. Helen provided the opportunity for me to extend my own feelings of hiraeth and test how far her own attachment to her land could inform her actions. While the character of Helen spends much of the novel away from Wales, her relationship to her homeland underpinned many of my decisions regarding the plot and character relationships developing within the novel. I wanted Helen's relationship with her home to be particularly problematic due to her aversion to Wylfa and simultaneous refusal to leave and live in a safer area. My intention was not to resolve this tension as part of the narrative, but to allow the novel to be, as Sarah Hall puts it, 'more of an investigation; [where] more questions are raised. [...] An inquiry into something,' (Hall, in *Masters*: n.d.). In this way the process of writing Helen was a cycle of asking questions regarding the ways in which relationships to the landscape of home were formed, acted out and determined behaviour. It was important to find a logic underpinning her actions, not just through her personal character traits of being introverted and independent, but in her choices regarding childrearing, lifestyle and interpersonal relations. I wanted to write an individual who wasn't defined by expectations of her role in society (as mother, daughter, sister, farmer), but rather reflected the complexities of her situation: the demands on her time and energy, her need to raise a son with similar self-sufficiency to her own, and the underlying fears of threat from her environment and the new development.

Towards the end of writing the second draft of *Borderlands* I was alerted to the situation of the Jones family at Caerdegog Farm (Crump, 2013). The family are resisting the expansion of the site proposed for Wylfa B by refusing to sell their ancestral farmland to the developers, and as such have become figureheads for the

People Against Wylfa B (PAWB, 2019) group. Their resistance has also been documented in the theatre production *Holtti* (Williams, 2017), a short film (The Battle of Caerdegog, 2012) and a photography project (Petersen, 2019). Following their story enabled me to analyse whether my portrayal of Helen's emotional and physical rootedness in the landscapes was realistic. The Jones' have been vocal about their strong connection to the landscape, stating in interviews 'God help me, I can never leave this place' (Peterson, 2019). They declare that their relationship with the land they farm is not one of ownership, but of the land having a hold on them (The Battle for Caerdegog, 2012). The Jones' connection to their land and refusal to leave reminds me of the intense attachment the Samosely (self-settlers who returned home to live in the Exclusion Zone after the Chernobyl disaster) have to their homelands. The film maker Holly Morris states that:

Most of the babushkas share the belief that "if you leave, you die". They would rather risk exposure to radiation than the soul-crushing prospect of being separated from their homes. [...] "Those who left are worse off now. They are all dying of sadness" (Morris, 2012).

These powerful demonstrations of how it feels to belong (and be bound) to a particular place reassured me that the decision I made early on in the writing process to explore Helen's sense of hiraeth and inability to let her farm go, at any cost, was the right one. For Helen, the connection to her land is personal, intense and irreplaceable, and I felt renewed confidence in my development of a character with these principles underpinning her actions and emotions.

The geographer Denis Cosgrove defines landscape as comprising 'the external world mediated through subjective experience' (Cosgrove, 1993: 8-9 cited in Lippard 1997: 12). Macfarlane, however, discussing the writing and poetry of Barry Lopez

and Peter Davidson, pushes this relationship between self and land further. He states that:

both Lopez and Davidson [...] see landscape not as a static diorama against which human action plays itself out, but rather as an active and shaping force in our imagination, our ethics, our relations with each other and the world' (Macfarlane, 2016a).

As such landscape forms identity, as much as identity can inform landscape perception.

Acknowledging the role landscape plays in forming identity provided the logic behind Helen's actions. By situating her in both the landscape and the family as a point of mediation - in that she continues the tradition of farming her ancestral land, maintains stability for her parents during her mother's illness, and enables Jennifer and Ioan to manage their hobby farm - all of her physical and emotional relationships are tied to the land. That she is raising a son alone and teaching him what she knows of her/his landscape - the realities of farming, the practical skills needed to have heat, food and shelter - further connects her to the land she has grown up in and engages with daily. I was aware as I wrote that her actions as a mother may seem to be transgressive in that she does not conform to:

patriarchal mandates of [motherhood, in which] it is assumed (and expected) that all women want to be mothers (essentialization), that maternal ability and motherlove are innate to all mothers (naturalization), and that all mothers find joy and purpose in motherhood (idealization) (O'Reilly, 2016: 64).

I especially wanted to explore the concept of motherhood that critic Andrea O'Reilly describes as essentialization, which 'positions maternity as basic to and the basis of female identity' (O'Reilly, 2016). It was important to me that I explored Helen's identity as having existed in relation to the landscape before and during her experience

of motherhood, and rather than this fundamental aspect of her identity being displaced by Jack, it must be evolved through her sharing the landscape with him. Her actions both in parenting Jack and choosing to protect the land, therefore, are explored as an expression of the complexities of self in relation to place, nuclearity, others and motherhood. They evolved from examining the logical responses to events from her embodied position in the landscape and subsequent beliefs and fears. As I developed her character through multiple drafts I felt that the combination of her anxieties and her need to both protect Jack and raise him to be emotionally and physically prepared and resilient suggested a survivalist mindset. Considering the childhood trauma she suffered from the Chernobyl disaster and related events, her mother's cancer, her own breast lump, and her lack of faith in nuclear safety, the ideology behind her feelings and behaviours emerged.

Like Helen's ambivalent relationship to her own landscape, in which attachment to and fear of the defining features of the landscape compete within her, so too are her feelings for Jack dichotomous, split between intense love and the burden of responsibility. Her importance as mediator developed within the novel through her absence, during which I explored how other characters were forced to change their engagement with their landscapes and each other without her there, and thus their emotional and behavioural responses change also. The character of Jack functioned in the writing process as one means of maintaining a connection between Helen and home during her trip. Even in his role as a catalyst for Jennifer's emotional and behavioural journey, he functions primarily to reveal the extent of Helen's anxieties and therefore her behaviours and emotions regarding the land around Wylfa.

The use of the Welsh language, Cymraeg, in the novel is also connected to identity in relation to place. While I was aware I could not write all the dialogue in

Welsh, as this would exclude readers who were not bilingual, I did feel it important to put as many words as possible in the mother tongue of the characters. Relying on surrounding contexts to hint at the meaning of these words to non-Welsh speakers, I blended them into sentences in the way I myself slip between the two languages, especially when I return to Wales. I refuse to italicise these words, despite it being common practice in literature to highlight the use of foreign words by using italics, and felt reassured to find other bilingual writers taking the same stance (see Ha, 2018 and Trnka, 2016). In my view these are not foreign words to the people speaking them. To represent them as such in the narrative would imply a supremacy of the English language over the Welsh, othering words which, for my characters, were an intrinsic part of how they expressed themselves within their own homeland. Out of respect for the Ukrainian characters, I employed the same presentation style for dialogue conducted in Ukrainian. I am fortunate to have a Ukrainian friend who helped me translate these sections into natural speech, rather than relying on a digital service such as Google Translate. My hope is that any Ukrainian or Welsh speakers reading the text will feel their language is as respected and valued as the English.

Conclusion

As I sit in the safety of my study, multiple tabs open on my browser, the desk lamp illuminating a stack of journal articles, and a pale Spring sunset making a watercolour of the fields beyond my window, I am aware of how this research journey has changed my personal anxiety regarding nuclearity and landscape. I am also aware that by studying both the landscape of Wylfa and Chernobyl through psychogeographic practice, and within the construction of the novel, I have come to feel closer to both. Instead of looking at fragmented images taken by other people, or studying maps of the new site proposed for Wylfa B, I have undertaken a physical and imaginative journey into those spaces, generating knowledge along the way. Returning to the novel post-textually is, for me, like reading a self-authored map of the landscapes I studied, and while I might be reading about the emotional and behavioural responses of my imagined characters, via the experience of my research and the process of writing I am also reading my own journey inside the narrative. As the author, the novel reignites in me associative memories and knowledge no other reader could access, and as such becomes an intratextual textbook and map for my future writing projects. The knowledge I have gained in terms of how to read landscapes, how to use psychogeographic study to understand the complexities of self/place relationships, and how to apply this knowledge through creative writing, will inform my future writing - adapting and evolving with each action I undertake.

For the reader, the novel might also be read as map of sorts, revealing something more of the landscapes of Wylfa and Chernobyl than official reports of radiation levels, proposed pylon routes, or relocation of bats, ever can. My poetics too can provide ideas and guidance for other writers who wish to engage in psychogeographic practice, or consider nuclear landscapes in their own writing. It

offers a map of writing practices that can be cut up, reordered and/or re-written in true Situationist style, to suit their own creative needs.

My identity has been changed by engaging with these landscapes. When I look at my photographs of Chernobyl now, I feel nostalgia for the experience, I feel pride that I made the trip alone, I feel empowered by the knowledge I have gained along the way, and acutely aware of how much more research needs to be done in the field of nuclear psychogeography. This project is only the beginning of further research I plan to undertake, in which collaborative study into multiple nuclear landscapes, and auto/ethnographic examinations of psychogeographic responses might illuminate further the specific ways in which the Nuclear Anthropocene can be explored creatively through writing.

For now, even though I still feel the tidal surge of hiraeth for Wales, I am here, in Lancashire, and will stay a while. From my window I can see for miles over the flat, waterlogged fields, and if I lean forward slightly I can see the cherry blossom just beginning to emerge on next-door's tree. Not exploding, but unfurling with a tentative promise that summer is not too far away. There is plenty in this landscape to fuel my future writing, I just need to get out into it, to walk and read the meaning in the hedgerows and furrowed fields, to think about how this landscape informs feelings and behaviours, and what stories could be rooted here.

Selected photographs

Wylfa

Figure 1



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<https://creativecommons.org/licenses/by-sa/2.0/>

This photograph, taken from a point in landscape close to where Jennifer and Ioan's fictional home was placed, shows some of the colour sympathies built into Wylfa's design by Sylvia Crowe (pp. 31-32 above).

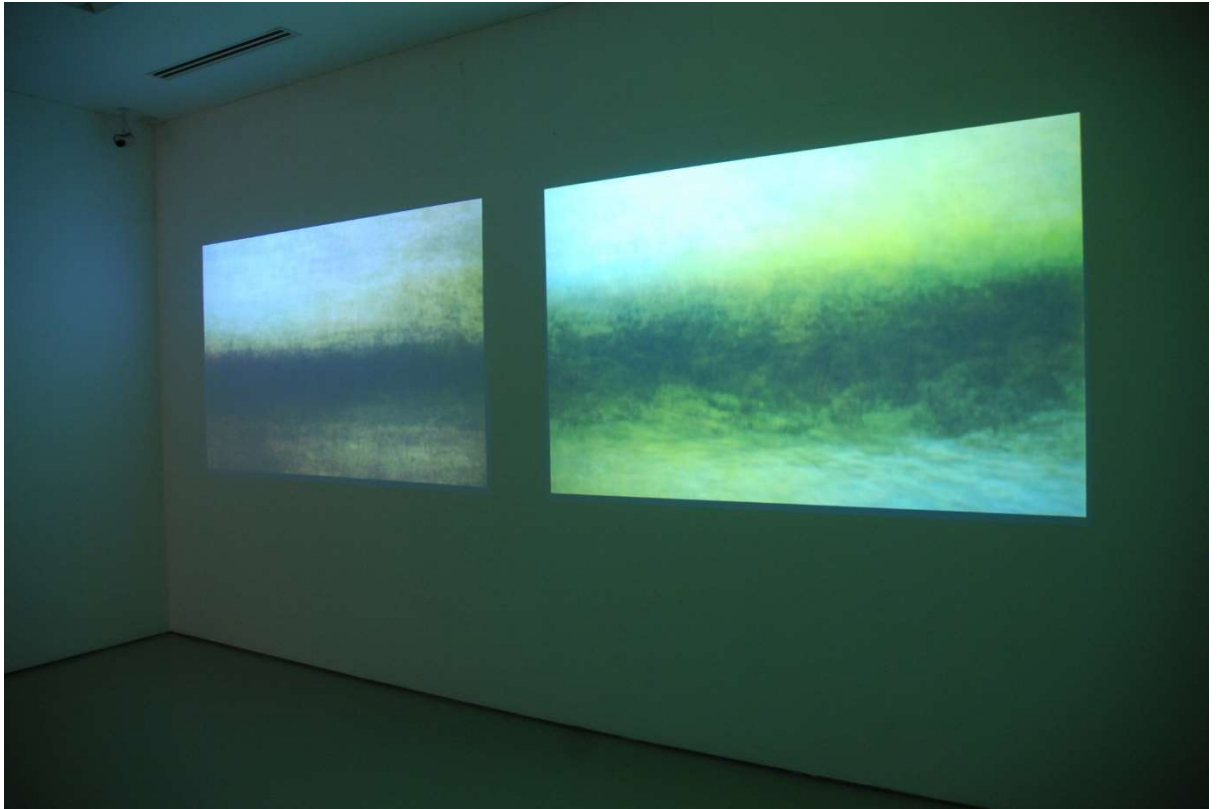
Figure 2



©Chris Oakley www.chrisoakley.com

Still from *Fata Morgana*, by Chris Oakley. This image shows the mirage like quality of the landscape, in which Wylfa's colours are blurred into the landscape, and the power station appears to be a vision, a mythical place, or imagined (pp. 33-34 above).

Figure 3



©Tim Skinner www.timskinner.co.uk

Camouflage Stain, Tim Skinner's layered film which provides an 'abstract look into the feeling, movement, texture, colour and rhythm of Anglesey's northern coastline; but echoing this ghostly stain [of Wylfa], a dialogue between power and the land' (Skinner, 2015) (p. 35 above).

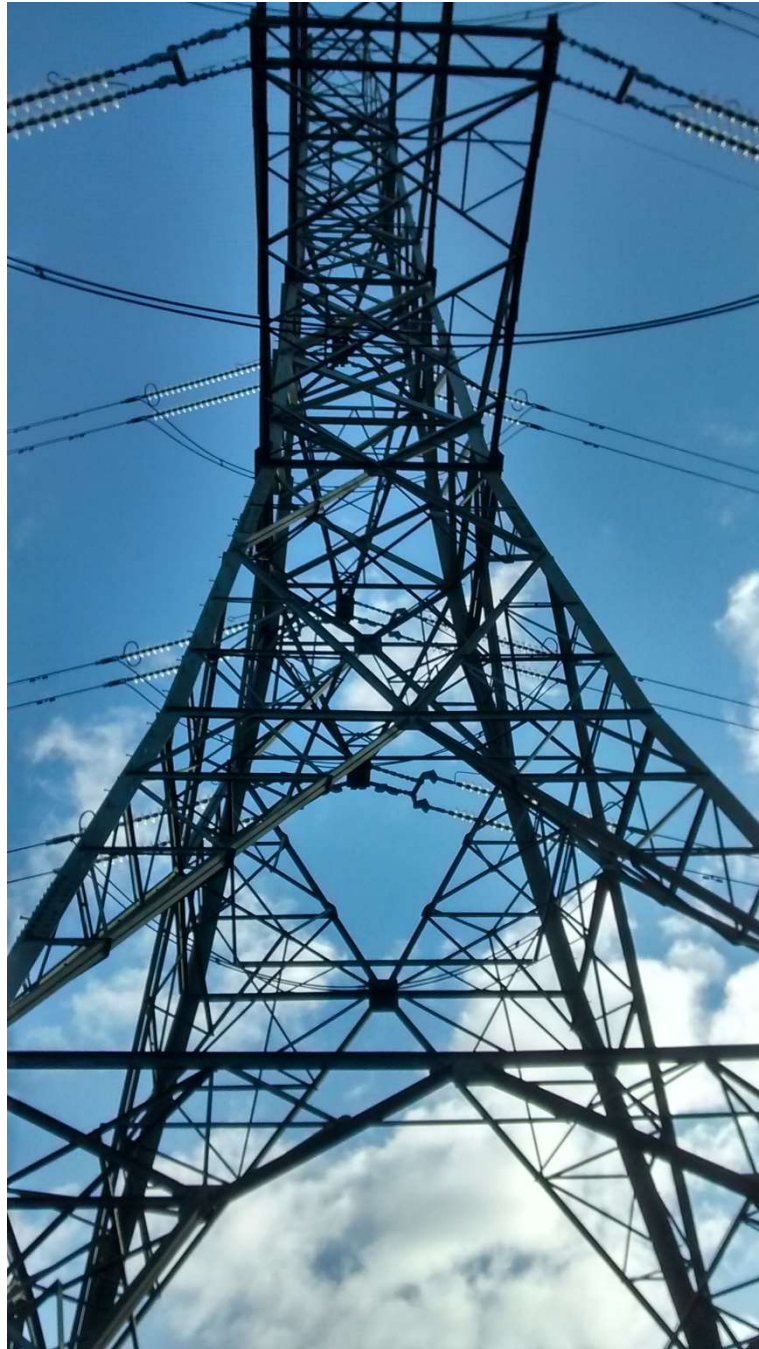
The following photographs are all ©Philippa Holloway

Figure 4



This photograph was taken during a writing retreat close to Wylfa in late February, the same time of year depicted in the novel. During the retreat I spent much of my time walking or writing, with the sensory details from one action permeating the other. This image shows a dead lamb, something I had already written about in the novel by this point (*Borderlands*, pp. 95 and 253), but that again resonated with me regarding the themes of radiological threat, neglect and survivalism explored in the novel. In the background there is an electrical substation, which illustrates the common sight in this area of industry, agriculture and nature interwoven within the landscape and thus informing the senses.

Figure 5



During the writing of this novel I became fascinated by pylons and how they might affect the individual emotionally and behaviourally. Their presence in the landscape is explored in the novel as both a disrupting force within (*Borderlands*, p. 11) and a connective device between landscape and community (*Borderlands*, pp. 24, 112, 246). This image aims to capture the sublime nature of pylons as vast and complex structures within nature. Emotional responses to pylons are explored in the novel a number of times, but perhaps most importantly as one of the catalysts for Jennifer's panic attack and perceptive shift in viewing Wylfa (*Borderlands*, p. 167).

Exclusion Zone

Figure 6

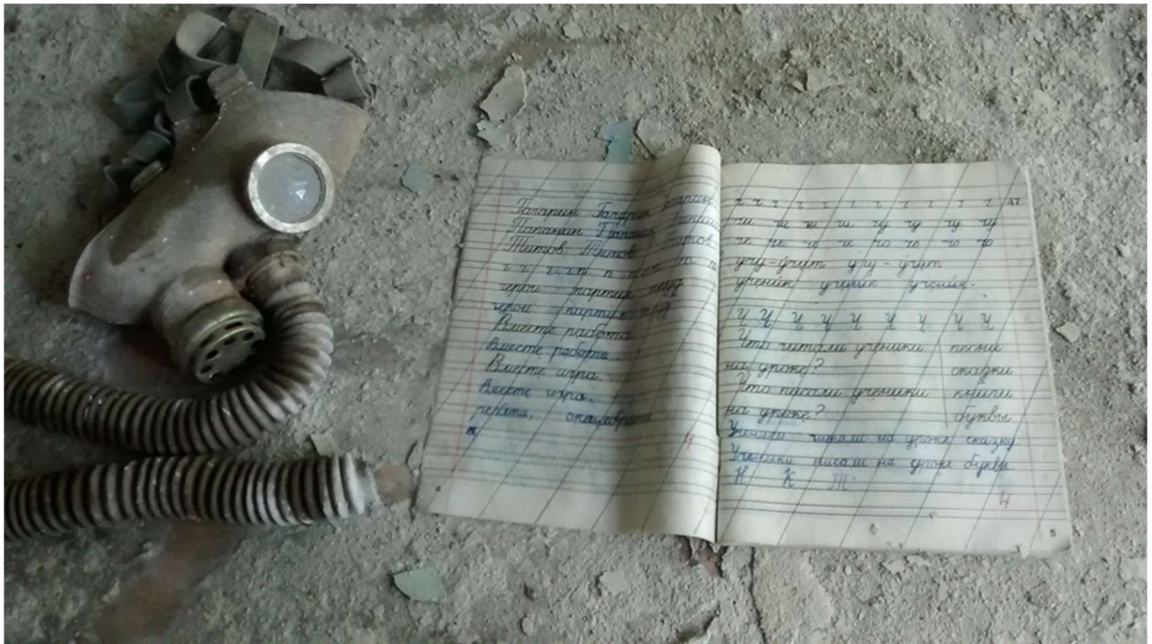


Tower Block,
Pripyat.

This image is similar to some of those taken by Robert Polidori, showing what at first seems to be a simple tower block, but which on closer inspection reveals decrepitude, creeping vegetation and the absence of human life.

School, Pripyat

Figure 7



Images of gasmasks in one of the schools in the town of Pripyat, showing the deliberate juxtaposition and highlighting of non-nuclear safety equipment with school books and dolls (see pp. 46-48 above).

Figure 8



This image shows both the number of gasmasks scattered since the evacuation of the school and the arrangement of items to create emotionally stimulating, if misleading, photographs of the Exclusion Zone. Both phenomena were explored within the novel (*Borderlands*, pp. 78, 114).

Tour motifs

Figures 9,10, and 11



© Adam Jones from Kelowna, BC, Canada - Ad for Chernobyl Tour on Rear of Solo East Travel Bus - Primary School at Kopachi Village - Chernobyl Exclusion Zone - Northern Ukraine, CC BY-SA 2.0, <https://commons.wikimedia.org/w/index.php?curid=64115640>



Gasmasks have become a symbol of the disaster and are used in advertising, gaming, and on the tour busses themselves, perpetuating a narrative based on mis-information and misreading the landscapes, and helping to sustain a low-level anxiety that preserves interest in the site while simultaneously misrepresenting it.



©Chernobyl Wel.come, 2018

Check-point, 15km Zone

Figure 12



There are multiple checkpoints controlling access to different areas within the Exclusion Zone. These function as a means of monitoring access and ensuring safety regulations are adhered to. They serve to represent the crossing of a threshold into an area of radiological risk within the visitor, although there is no significant difference in either the landscape or dosimeter readings between each side. They create an emotional and behavioural reaction that can be both heightened and anti-climactic, as discussed on pp. 57-59 and 62 above, and in *Borderlands* p. 57.

The Dérive

The following images were taken during multiple dérives over the space of three days in the Exclusion Zone, and briefly in Ivankiv. A number of these images either directly influenced passages in the novel, the links between the landscapes of Chernobyl and Wylfa, or appeared within the text as images Helen herself took.

Figure 13



Nursery School

Figure 14



This image, taken in the nursery school at the start of my tour, informed the scene in the novel in which Helen first encounters one of the buildings on the tour and becomes caught up in a liminal and palimpsestic interchange between the actual space and her memories of Jennifer's sandals from childhood. Through this scene I explored the writing of Helen's *durée*, in which past emotions and knowledge form part of her present experience (*Borderlands*, p. 59).

Figure 15



The experience of visiting the nursery school in the Exclusion Zone contributed to the structuring of the novel as a contiguous narrative. Despite the artificial arrangement of items for photographic purposes, I recognised similarities between this space and the school on Anglesey that my son attended when we lived there. This informed creative decisions regarding the echoing of each landscape within each strand (see *Borderlands*, p. 58 and 59 for an example)

Figure 16



Figure 17



The presence of abandoned dolls at various location in the Exclusion Zone informed creative connections between Helen's experience of the trip and Jack's vulnerability back home as discussed on p. 52 above, and illustrated in *Borderlands*, p. 114.

Figure 18



Encountering this toy in the Exclusion Zone led to the development of repeated imagery that linked both landscapes regarding themes of childhood, landscape destruction, abandonment and industry, as discussed on p. 63 above, and illustrated on pp. 30, 88, 96, 113, 146, and 256 of *Borderlands*.

The hospital

Figure 19



Encountering the maternity suite in one of the hospitals in Pripyat informed the exploration of Helen's *durée*, and led to the revelation of her past trauma regarding childbirth and Wylfa. See pp. 80-82 of *Borderlands*, and chapter 13 where the trauma is revisited differently due to different triggers in her *durée*.

Figure 20



One of the operating theatres in Pripyat, possibly rearranged by photographers since the disaster. Note the carefully arranged artefacts which are unlikely to have been left this way by staff evacuating.

The School

Figure 21



The positioning of this desk in one of the schools in Pripyat highlights one of the ways in which artefacts have been arranged to create carefully composed imagery as explored in *Borderlands* p. 77.

Figure 22



The scattering of books in some of the school rooms created a feeling of unease – it is unlikely they were spread around like this during the evacuation, which leaves the visitor wondering what may have happened since (see *Borderlands* pp. 59 and 77).

Figure 23



Offerings of sweets and money are left by Ukrainian visitors during religious festivals such as Radunitsa, when citizens are allowed to visit relatives and graveyards in the Exclusion Zone. Details like these informed the textural content of *Borderlands* (see p. 77).

Village houses

Figure 24



Village houses in the Exclusion Zone are in various states of decay, with some still accessible in areas with low to background radiation. Documenting multiple houses allowed me to evoke different spaces in the novel as Helen progressed through the trip and then again through the Zone with Anton. They also provided links to the landscape of Wylfa where houses were being removed and abandoned to make way for the new development.

Figure 25



Some houses still hold the echo of previous lives in the items left behind. These details informed the depiction of the abandoned spaces in both the Exclusion Zone and Wales (see *Borderlands* pp. 61, 71, 16, 146, and 170).

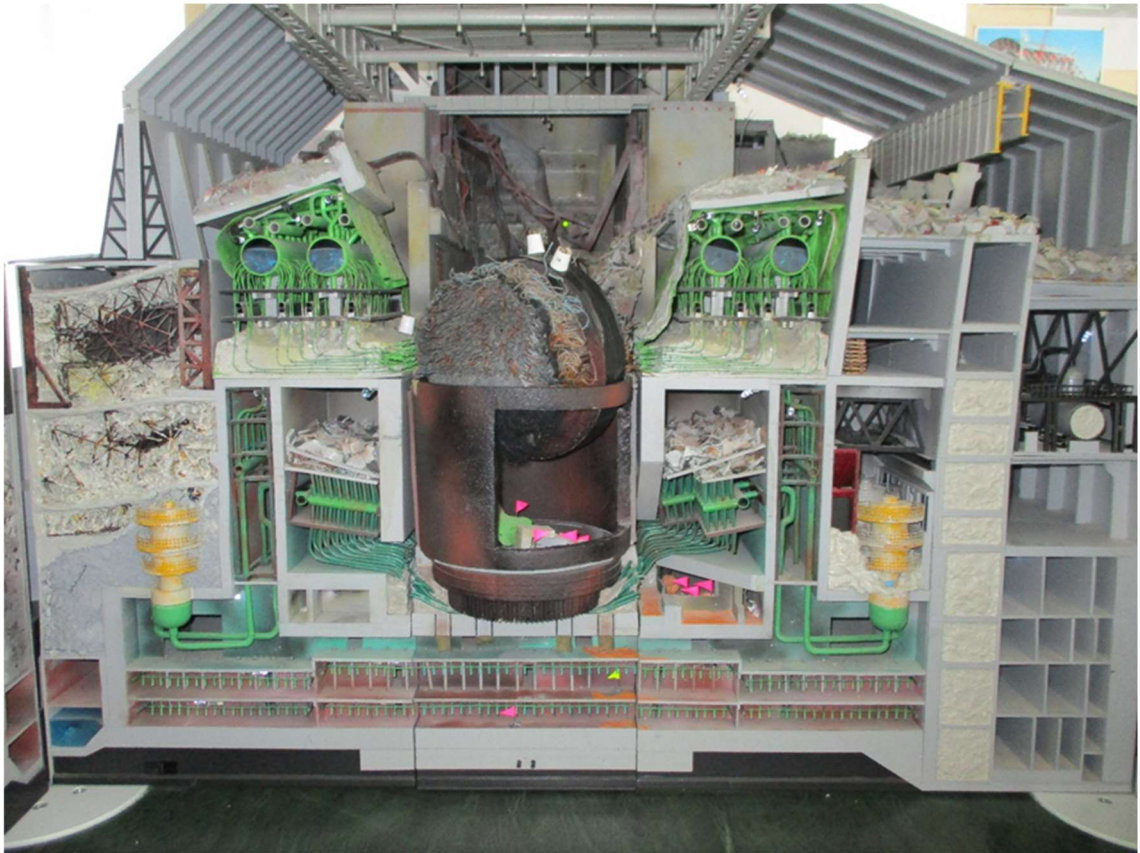
Figure 26



Capturing imagery that revealed the design of some houses within the villages in the Exclusion Zone was integral to my recreation of these spaces in the novel (see *Borderlands* pp. 61 and 214)

The Reactor Four ‘dollhouse.’

Figure 27



This recreation of the inside of Chernobyl's Reactor Four and the damage caused by the explosion is a stark contrast to the encased real reactor that can be seen through the window of the same room, and which is now covered by the New Safe Confinement unit. It serves to heighten the awareness that the inside of the reactor can exist only in the visitor's mind, as it is too toxic to experience in person. Photographs taken by robots can be viewed online, the pictures grainy due to radiological damage of the recording equipment. They similarly generate a strong emotional response related to the hidden and invisible nature of radiation, of proximity and distance. I have no photographs of the sarcophagus taken from this location as photography from this viewing area is prohibited. See *Borderlands* pp. 63-67 for how the psychogeographic response to these contrasts were explored in the novel.

From my journal:

How do I feel? It's sunny and green today, we get close, closer than I ever thought possible. I am calm, I am ready. We stop to see it all – 1,2,3,+4+NSC. Closer and we are 300m away. Julia tells me the spiel, then we talk about tourist response. As we speak it is there, thru the glass, and in miniature - the world's darkest doll's house, we open the old sarcophagus to see the devastation inside.

Wild dogs

Figure 28



During my trip I encountered wild dogs at a number of places where people worked: checkpoints, the town of Chernobyl, near the hotel, for example. They are treated as vermin by some and welcomed by others. My risk assessment forbade me interacting with them, regardless of how friendly they were, due not only to the risk they may be radiologically contaminated, but because of the threat of rabies. They feature within the novel as another link between the landscapes, with their presence both a contrast and comparison to that of the farm dog, Megan, as well as a metaphor for contamination, risk, threat, and the loss of connection between man and animal due to disaster. (See *Borderlands* pp. 40, 41, 74, 75, 85, 247 and 253).

From my journal:

Chornobyl town – half functioning, dogs (feral – rabies risk), uniforms/military. It's unnatural not to crouch and stroke them. "Vermin, like mice", "from the same place as cockroaches". Guide shouts and shoos them away and I feel like something important is broken.

Dosimeters

Figure 29



Figures: 30-35



Dosimeters are an integral part of the Chernobyl experience, as discussed in section 2.4 (pp. 64-71) above. During the trip I was frequently encouraged to take photographs of the readings we took in different locations, or to take note of specific areas with a high reading, such as the space just off the path near the nursery school as depicted above.

From my Journal: *Bulldozed village – trees, trees, trees! – Nursery – dosimeter jumps up...*

Textural Mapping

The following pages contain a small sample of the photographs I took to record the textures of the Exclusion Zone, as discussed in section 2.6 (pp. 77-79) above. Coupled with notes from my journal these images were vital to the mapping of Helen's trip and how these spaces were depicted in the novel.

Figure 36



From my Journal:

Soft blue, curling. Cold.

(see Borderlands p. 77)

Figure 37



From my Journal:

Water stains and mould, moss, like a map spreading on the walls and ceilings.

(see *Borderlands* p. 224)

Figure 38



From my Journal:

Walking on books in school, soft – like moss – transgressive!

(See *Borderlands* p. 77)

Figure 39



From my journal:

Bright blue paint, scabby and blistered. Need force to get in, violation.

(see *Borderlands* p. 61)

Figure 40



From my journal:

*Leaves and dust and cobwebs merged with glass and clothes and sun-bleached cloth.
Empty pots. Empty.*

(See *Borderlands* p. 61)

Figure 41



From my journal:

Bright colours, blue and green and red. Smell is dense smoke and stale clothes. Cloth pinned at window, and beyond shape of a bird falling to the ground from roof – shadow. Baba Olena’s house? c.f. Helen’s house– make links!

(See *Borderlands* pp. 42, 115, 116, and 124 for examples in the text)

Figure 42



From my journal:

Clutter, potatoes under filmy water, smell of stale onions, apricots drying on an old fridge no longer working, flies.

(See *Borderlands* pp. 42, 115, 116, and 124 for examples in the text)

Iconic imagery of Chernobyl

Figure 43



The swimming pool in Pripyat, which features heavily in tourist photography and also video games/VR renditions of the Exclusion Zone.

Figure 44



The bumper cars, showing the graffiti tags that informed ideas relating to territory and home that run through *Borderlands*, and which are described on p. 75 of *Borderlands*.

Figure 45



The Ferris wheel, which has come to be an iconic symbol of both nuclear hubris and the pathos of evacuation. Helen's response to it is shown on p. 74 of *Borderlands*.

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